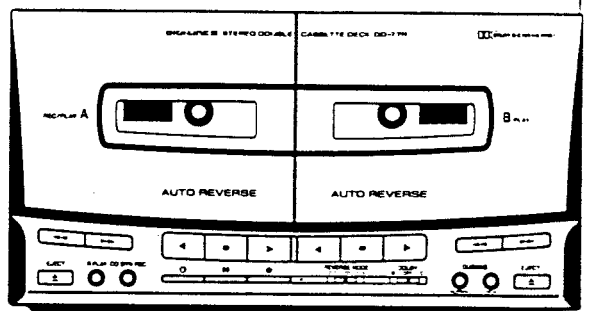
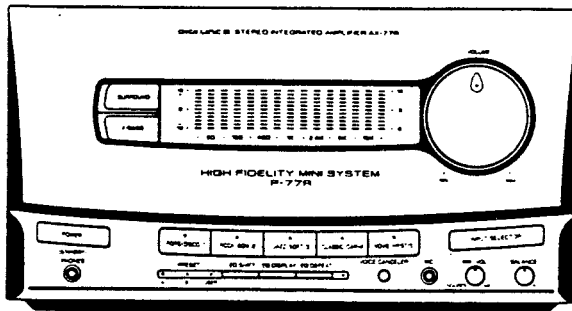
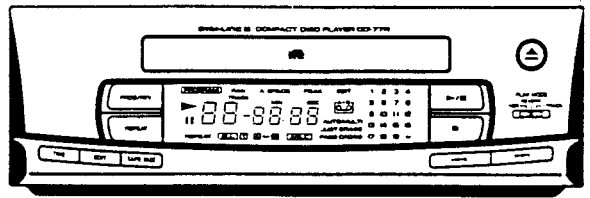
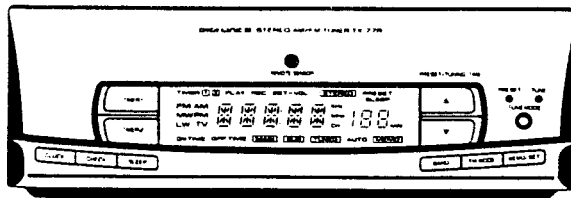


SERVICE MANUAL

P-77R



AMP.....Model No. : AX-77R

TUNER.....Model No. : TX-77R

DECK.....Model No. : DD-77R

COMPACT DISK EXPENDED
GRAPHICS PLAYER.....Model No. : CDEG-77R

CONTENTS

AMP AX-77R SPECIFICATION	3
WIRING DIAGRAM.....	4
TROUBLESHOOTING.....	5
P.C BOARDS.....	8
BLOCK DIAGRAM.....	11
SCHEMATIC DIAGRAM(I).....	13
SCHEMATIC DIAGRAM(II).....	15
ELECTRICAL PARTS LIST.....	17
MECHANICAL PARTS LIST.....	34
EXPLODED VIEW.....	37
IC LEAD IDENTIFICATION.....	39
SEMICONDUCTOR VOLTAGE CHART.....	41
TUNER TX-77R SPECIFICATION	43
CIRCUIT DESCRIPTION.....	44
ALIGNMENT PROCEDURES.....	50
P.C BOARDS.....	53
SCHEMATIC DIAGRAM.....	55
ELECTRICAL PARTS LIST.....	57
EXPLODED VIEW.....	63
SEMICONDUCTOR LEAD IDENTIFICATION & INTERNAL DIAGRAM.....	65
SEMICONDUCTOR VOLTAGE CHART.....	67
DECK DD-77R SPECIFICATION	69
CIRCUIT DESCRIPTION.....	70
ALIGNMENT PROCEDURES.....	73
ALC CIRCUITS AND FIXED RECORD LEVELS.....	76
WIRING DIAGRAM.....	77
BLOCK DIAGRAM.....	78
P.C BOARDS.....	79
SCHEMATIC DIAGRAM(I).....	81
SCHEMATIC DIAGRAM(II).....	83
ELECTRICAL PARTS LIST.....	85
MECHANICAL PARTS LIST.....	95
EXPLODED VIEW.....	97
EXPLODED VIEW(I) (DECK MECHANISM ASS'Y).....	99
EXPLODED VIEW(II) (DECK MECHANISM ASS'Y).....	100
SEMICONDUCTOR LEAD IDENTIFICATION & INTERNAL DIAGRAM.....	101
SEMICONDUCTOR VOLTAGE CHART.....	103
COMPACT DISK EXTENDED GRAPHICS PLAYER CDEG-77R SPECIFICATIONS	104
CIRCUIT DESCRIPTION.....	105
TEST POINT LOCATIONS(PCB TOP VIEW).....	108
CIRCUIT ADJUSTMENT.....	109
TROUBLESHOOTING.....	111
P.C BOARDS.....	120
WIRING DIAGRAM.....	121
BLOCK DIAGRAM.....	123
SCHEMATIC DIAGRAM(I).....	125
SCHEMATIC DIAGRAM(II).....	127
ELECTRICAL PARTS LIST.....	129
IC LEAD IDENTIFICATION & INTERNAL CIRCUITRY.....	138
SEMICONDUCTOR VOLTAGE CHART.....	141
EXPLODED VIEW.....	145
EXPLODED VIEW(COMPACT DISC MECHANISM).....	147

AMP AX-77R SPECIFICATION

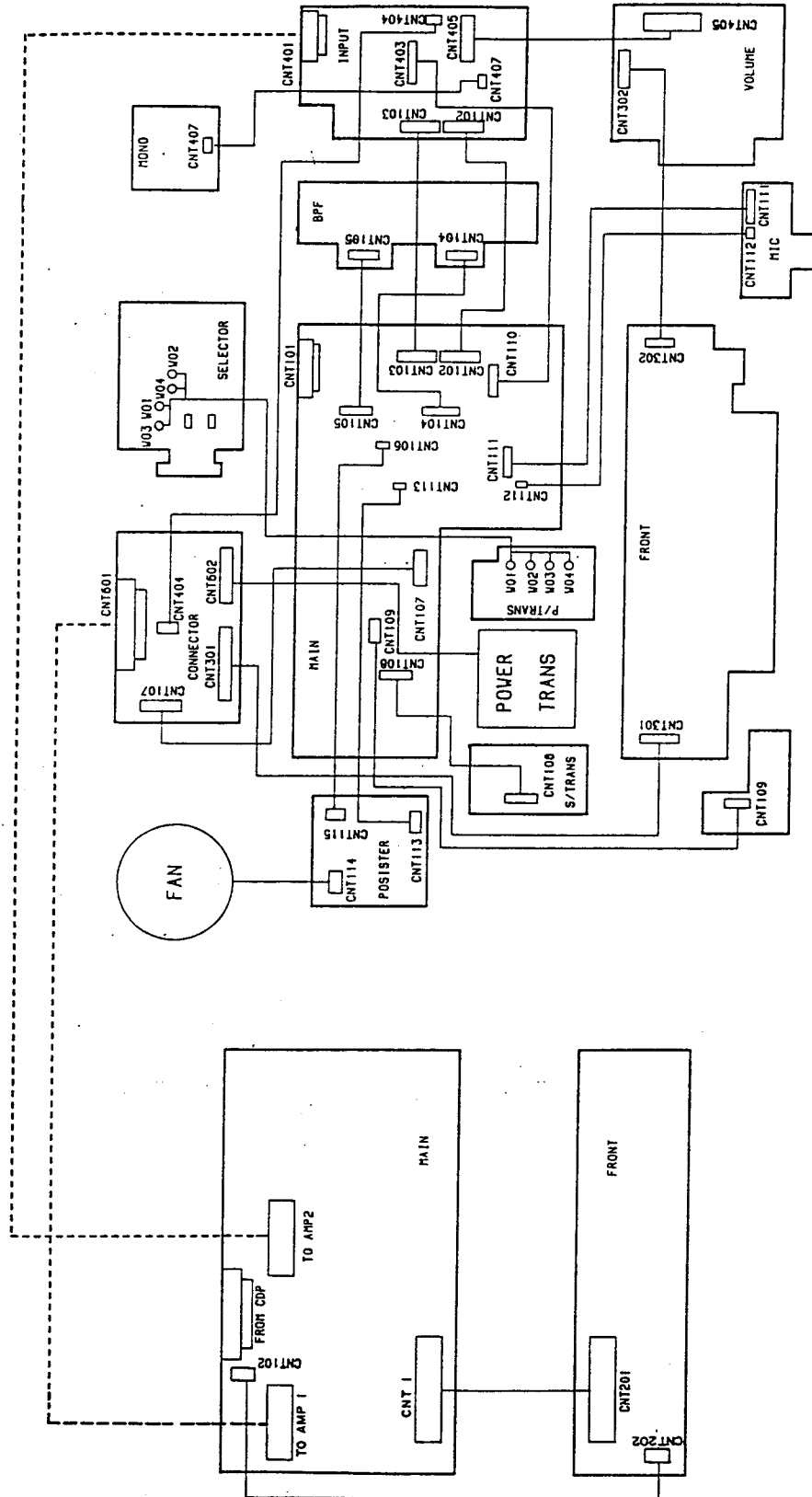
Amplifier

Power output at THD (0.5)% both CH. Driven	50W
THD at rated power out (50)W both CH. Driven(1kHz)	0.03%
IMD at (50)W 60Hz/7kHz (4 :1)	0.03%
Power output at THD (0.5%) (1kHz)	53W
Input sens at 50W (1kHz)	
Video	250±30mV
Phono	3.5±0.5mV
MIC	1±0.5mV
Channel balance(50W/1kHz)	0.3dB
Damping Factor (1kHz)	85
Residual hum & Noise (VR MIN)	0.8mV
Hum & Noise (UNWTD)	
Video	78dB
Phono	65dB
MIC	38dB
Input over load THD(0.5%) (1kHz)	
Phono	100mV
CH Separation	
Video(1kHz)	55dB
(10kHz)	52dB
Crosstalk(1k/10kHz)	
Video → Phono	62/56dB
Video → Monitor	78/70dB
Graphic EQ Control	10±2dB
Input over load(1kHz)	
MIC	40mV
Freq. Response (-3dB)	40~70K
Phono EQ curve	
100Hz	+12±1dB
10kHz	-13.7±1dB
Power Requirements;	
A : 120V 60Hz for USA/Canadian version	
B : 120/220V, 60/50Hz for multi-voltage version(switchable)	
C : 230V 50Hz for general European version	
D : 230V 50Hz for Germanian/Italian version	
E : 240V 50Hz for British/Austalian version	
F : 230V 50Hz for Swiss/Scandinabian version	

Note : Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the European standard, and provides information on regional circuit modification through use of alternate schematic diagram, and information on regional component variations through use of parts list. Design and specifications subject to change without notice for improvement.

WIRING DIAGRAM

Model No.:AX/TX - 77R



TROUBLESHOOTING

Symptom	Cause and Remedy
Tuner and Amplifier inoperative (FL indicator does not light)	A) Faulty AC power cord. Replace. B) Defect in the power switch. Replace. C) Broken wire and PCB in the power transformer. Replace the power transformer. D) Blown power. Replace the fuse.
Fuse blows when power is turned on	A) Defective power transformer. Replace. B) Short in the primary or secondary of the transformer circuitry. C) Damaged rectifier D104 or D106 to D111 Replace the defective component(s). D) Short circuit in the rectifier circuit. Repair the short.
Display of the amplifier lights but no sound from both channels	A) H/P Board CNT109 does not mate with Main Board CNT109 PLUG. Replace the CNT109. B) Defect in transistor Q101 L/R or Q102 L/R on the Main Amp Board. Replace the defective component(s). C) IC103 or Relay 101 defective. Replace the defective component(s).
Speaker works normally but headphones inoperative	A) Headphone plug does not mate with jack. Replace the plug. B) Defective resistor R902 L/R. Replace.
All the inputs work normally except VIDEO input	A) Poor contact in VIDEO input jack. Repair or replace the jack. B) Defective IC402. Replace.
PHONO input inoperative	A) Poor contact in phono input jack. Repair or replace the jack. B) Defective IC402. Replace.
TAPE has no effect	A) Defective contact in SYSTEM CNT3. Repair or replace the Connector. B) Defective IC402. Replace.
FM inoperative	A) Defective front-end. Replace the switch. B) Defective FM switch. Replace the switch. C) Defective transistor Q101, Q120, Q121 or IC101. Replace the defective transistor(s) or IC(s). D) Defective coil L105 or L106. Replace the coil(s). E) Defective lead-in. Repair or replace the lead in. F) Ceramic filter CF101, CF102 or CF103 defective. Replace the defective ceramic filter(s). G) Defective controller circuit component. Replace.

Symptom	Cause and Remedy
Poor multiplex separation	A) Improper adjustment. Readjust VR102. (Refer to MPX Alignment.) B) IC101 defective. Replace. C) Variable resistor VR102 defective. Replace the variable resistor(s).
STEREO indicator does not light.	A) Defective indicator in FL. Replace. B) Defective IC101. Replace the defective component.
FM volume not sufficient	A) IF volume from both L and R channels is not loud enough: Front-end section defective, or faulty IC101, coil L105. B) IF sound from one channel is not loud enough, defective L 109, L110. Replace.
FM MUTE has no effect	A) Defective FM MONO/FM Mute off switch. Replace the switch. B) Defective IC101, Replace the defective component(s).
AM inoperative	A) Damaged IC101 of tuner board. Replace. B) Defective L102~L104, L108 or CF104 of tuner board. Replace the defective component(s) C) Capacitor C106, C109 or C129 defective. Replace the defective capacitor(s). D) Defective AM switch. Replace. E) Defective varicap diode VD1, VD2, or VD3 Replace varicap diode(s). F) Damaged AM loop antenna. Repair or replace. G) Defective controller circuit component. Replace.
EQ control has no effect	A) Defective EQ Defeat Switch. Replace. B) Defective IC103 or IC111. Replace the defective component(s).
AUTO tune inoperative (UP/DOWN) (AM or FM)	A) Poor contact in Up/Down key. Repair or replace. B) Defective IC201. Replace. C) Defective FL. Replace. D) Defective tuner circuit component. Replace. E) In FM only, improper adjustment of FM front-end. Replace.
MAUNAL tune inoperative (UP/DOWN) (AM or FM)	A) Poor contact in Up/Down key. Replace. B) Defective IC201. Replace.
MEMORY setting inoperative	A) Defective IC201. Replace the defective component.

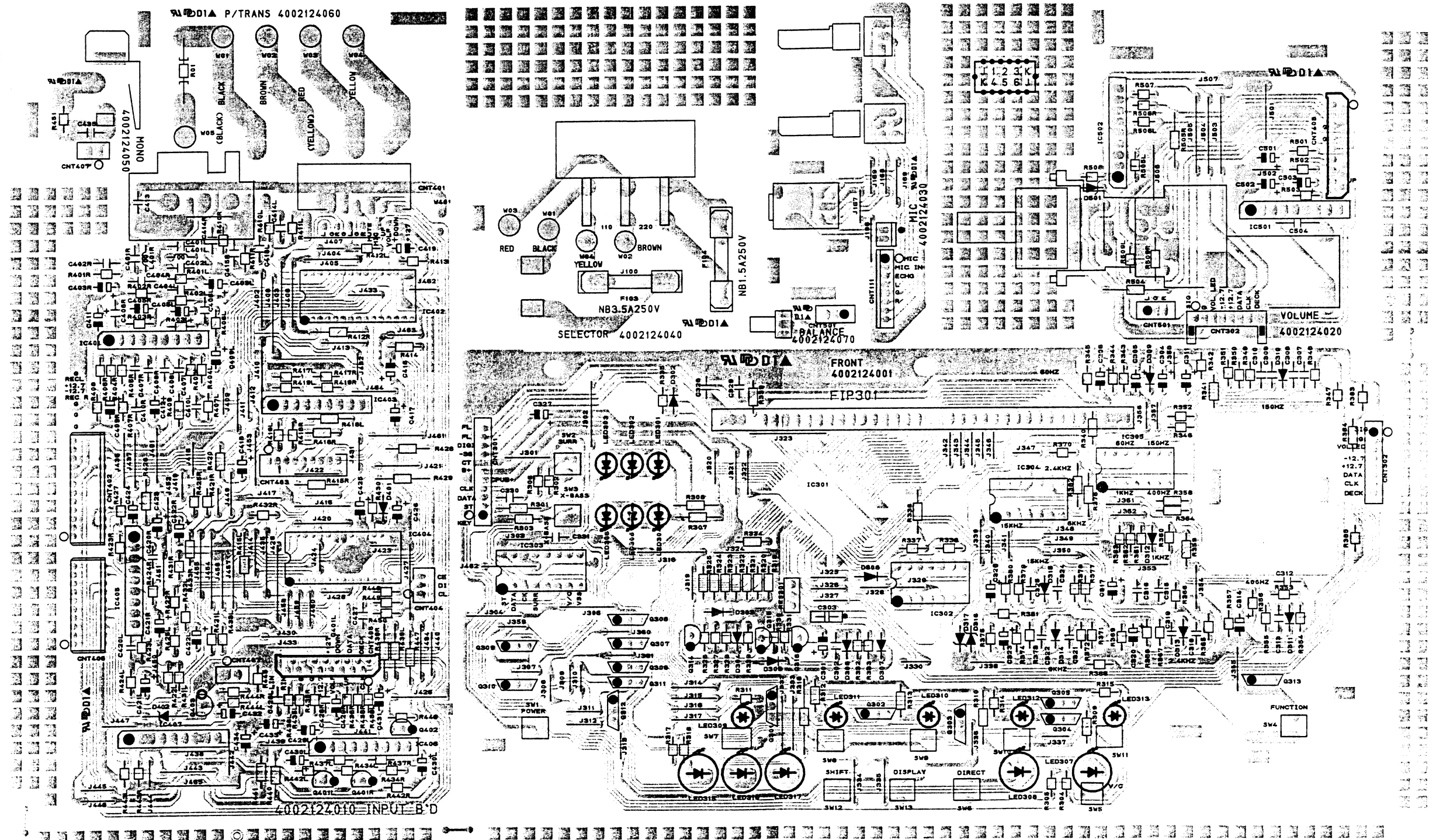
Symptom	Cause and Remedy
FL inoperative	A) FL defective. Replace. B) Defective IC201. Replace. C) Defective XT201. Replace.
Noise VOLUME control	A) Defective IC401. Replace. B) Defective capacitor C401 or C402. Replace the defective capacitor(s).
REMOTE CONTROL UNIT inoperative	A) Weak Battery. Replace. B) Defective. Replace. C) Defective IC201. Replace.

MAIN P.C.B(TOP VIEW)



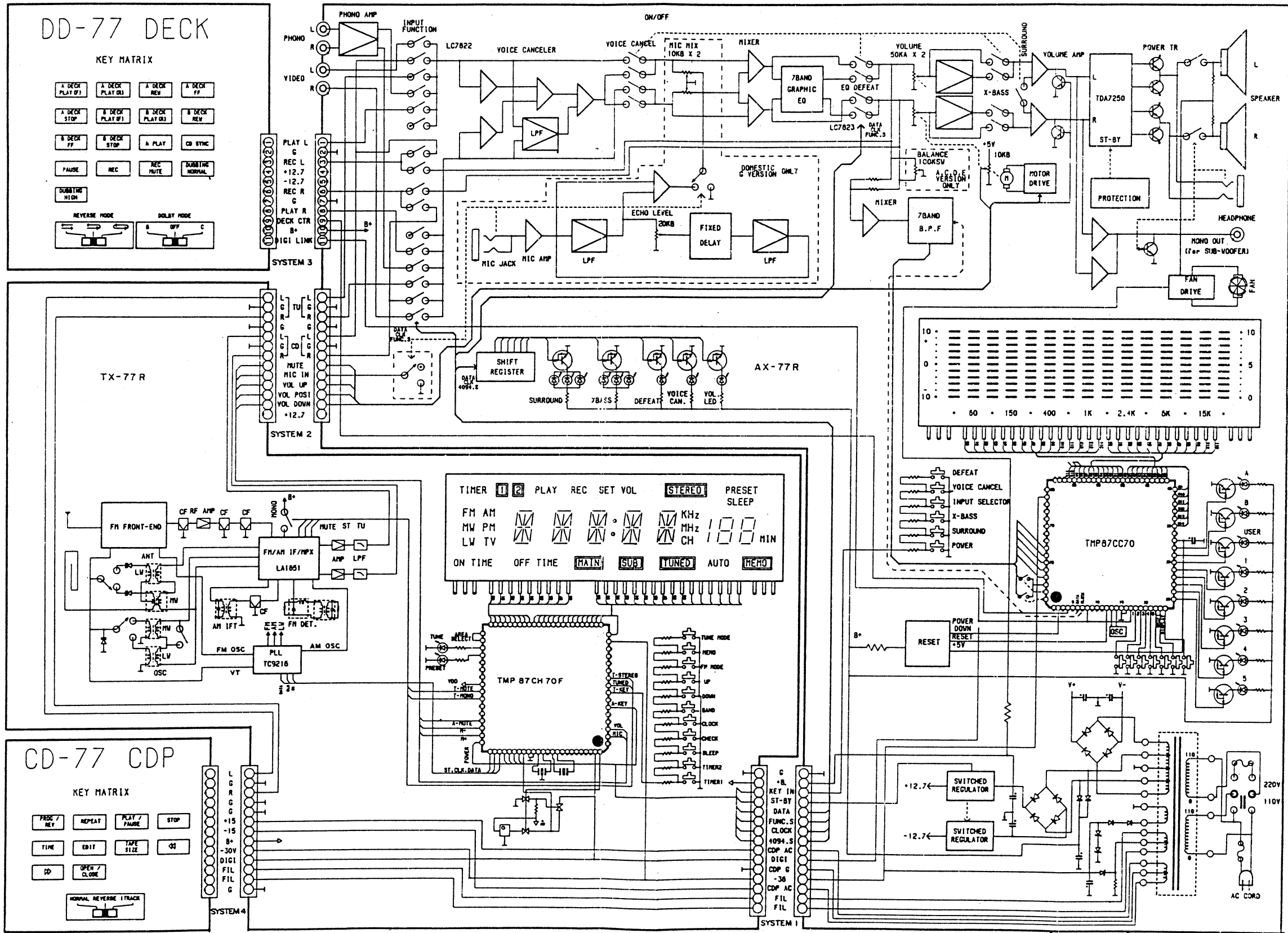
P.C. BOARDS

FRONT P.C.B(TOP VIEW)



BLOCK DIAGRAM

Model No.:AX/TX - 77R



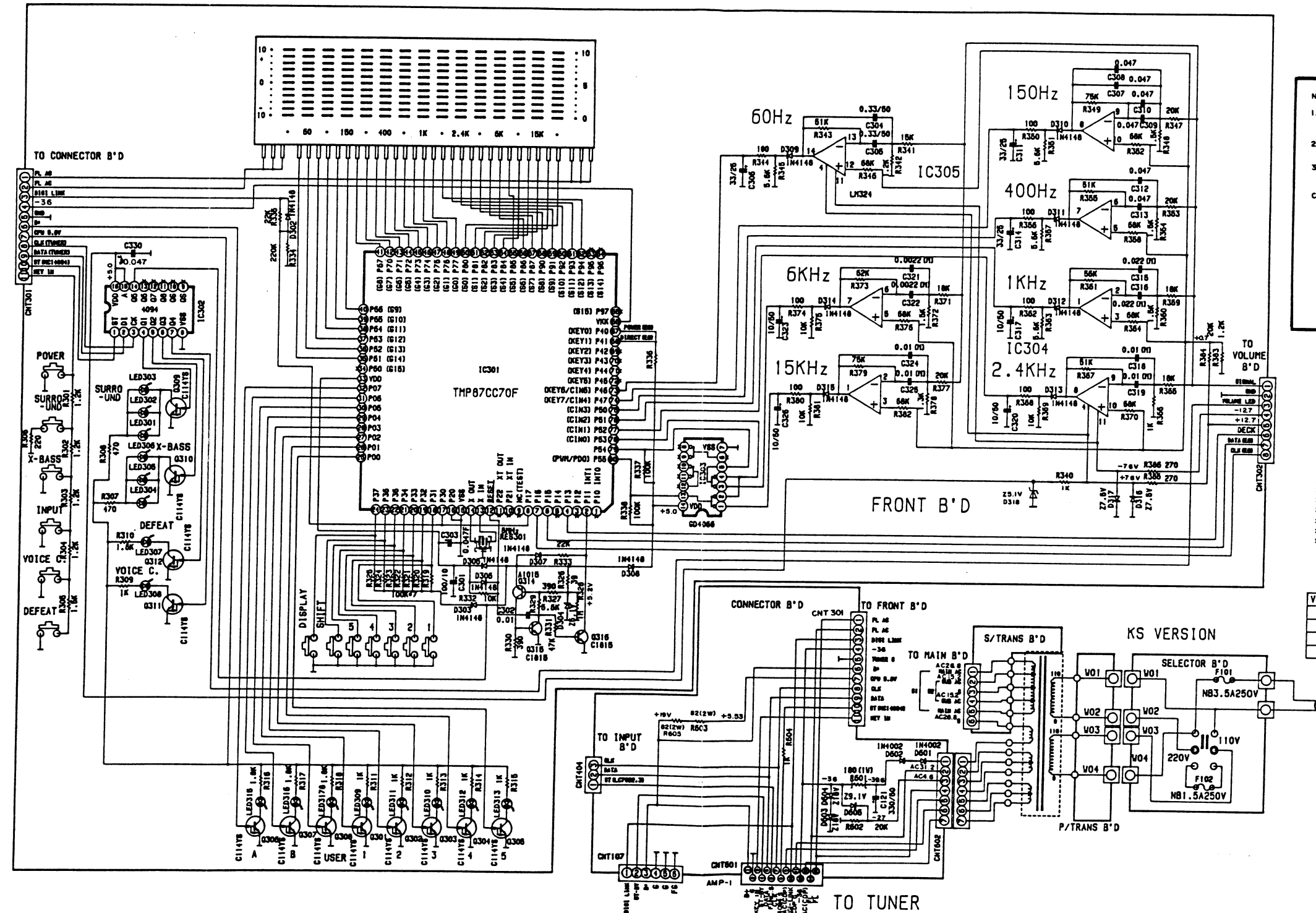
MIC B'D DOM
G] ONLY

BPF B'D



SCHEMATIC DIAGRAM (II)

Model No.:AX - 77R



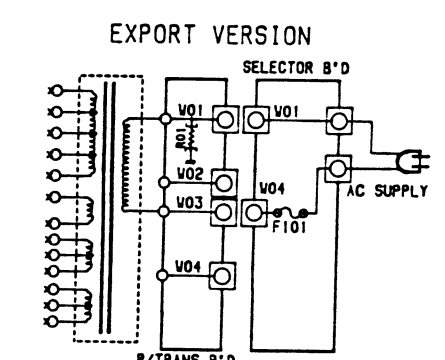
NOTES

1. Resistance values are indicated in ohms unless otherwise specified (K=1,000 M=1,000,000)
2. Capacitance values are shown in microfarads unless otherwise noted (P= micro micro farads.)
3. DC: Value with no signal

CAUTION

Safety precautions to be followed during servicing

1. Since these parts marked with are critical parts for safety use the one described parts list.
2. Before returning the receiver to the customer make appropriate leakage current or resistance measurements to determine that exposed parts are properly insulated from the supply circuit.



VERSION	TRANS	F101	R01
A	2828098901	NB 3A 125V	3.3M 1/2W
D	2828098301	T 1.6A 250V	
E	2828098101	T 1.6A 250V	
G	2828099001	T 1.6A 250V	

ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE: Components marked with a $\triangle$ have special characteristics important to safety. If you replace any of these components, read carefully the product safety notice in this manual. Don't degrade the safety of the product through improper servicing. Resistor/Capacitor Tolerance, D:($\pm 0.5\%$), J:($\pm 5\%$), K:(10%), M:($\pm 20\%$), Z:(+80, -20%).

Ref. No.	Description	Mfr. Part No.	Remark
	PCB ASSEMBLY - MAIN	054077123900	
Capacitors			
C101L/R	Electric SA 0.22 μ F 50V M	3479222871	
C102L/R	Ceramic Tubular 1000 pF 50V J	3519102935	
C103L/R	Electric SG 47 μ F 25V M	3479347041	
C104L/R	Ceramic Tubular 150 pF 50V J	3519151935	
C105L/R	Ceramic Tubular 150 pF 50V J	3519151935	
C106L/R	Ceramic Tubular 15 pF 50V J	3519150935	
C107L/R	Ceramic Tubular 100 pF 50V J	3519101935	
C108L/R	Ceramic Tubular 100 pF 50V J	3519101935	
C109L/R	Electric SA 0.68 μ F 50V M	3479268871	
C110L/R	Electric SG 22 μ F 25V M	3479322041	
C111L/R	Electric SA 10 μ F 50V M	3479210071	
C112	Electric SA 2.2 μ F 50V M	3479222971	
C113L/R	Mylar 0.047 μ F 100V J	3679473120	
C114L/R	Ceramic Tubular 2200 pF 50V J	3519222915	Dom, (FTZ)
C115	Ceramic Tubular 2200 pF 50V J	3519222915	Dom, (FTZ)
C116/117	Electric SG 4700 μ F 50V M	3419547225	
C118	Electric SG 1000 μ F 25V M	3409310249	
C119/120	Electric SG 2200 μ F 25V M	3409322249	
C122	Electric SA 4.7 μ F 50V M	3479247971	
C123	Electric SG 220 μ F 25V M	3479322141	
C124	Mylar 0.001 μ F 100V J	3679102120	
C125/126	Mylar 0.1 μ F 100V J	3679104120	
C127/128	Mylar 0.068 μ F 100V J	3679683120	
C129-131	Mylar 0.068 μ F 100V J	3679683120	Dom, (FTZ)
C132/133	Mylar 0.01 μ F 100V J	3609103160	
C134-136	Mylar 0.01 μ F 100V J	3609103160	Dom, (FTZ)
C137/138	Electric SG 47 μ F 25V M	3479347041	
C139L/R	Electric SA 2.2 μ F 50V M	3479222971	
C140L/R	Electric SA 2.2 μ F 50V M	3479222971	
C141L/R	Ceramic Tubular 47 pF 50V J	3519470935	
C142/143	Electric SG 47 μ F 25V M	3479347041	
C144L/R	Mylar 0.01 μ F 100 V J	3679103120	
C145L/R	Mylar 0.01 μ F 100 V J	3679103120	
C146L/R	Mylar 0.01 μ F 100 V J	3679103120	
C147	Mylar 0.01 μ F 100 V J	3679103120	
C148	Electric SA 4.7 μ F 50V M	3479247971	
C149/150	Electric SG 100 μ F 10V M	3479310121	
C151	Electric SA 4.7 μ F 50V M	3479247971	

*Mylar is a registered trademark of E.I.Dn Pont de Nemeurs and Company.

Ref. No.	Description	Mfr. Part No.	Remark
C153	Ceramic Tubular 100 pF 50V J	3519101935	
C154	Electric SA 4.7 μ F 50V M	3479247971	
C155/156	Ceramic Tubular 100 pF 50V J	3519101935	
C157	Not used	.	
C158/159	Ceramic Tubular 220 pF 50V J	3519221935	
C160	Mylar 0.0033 μ F 100V J	3679332120	
C161	Mylar 0.015 μ F 100V J	3679152120	
C162	Electric SA 3.3 μ F 50V M	3479233971	
C163	Ceramic Tubular 220 pF 50V J	3519221935	
C164	Electric SA 4.7 μ F 50V M	3479247971	
C165	Mylar 0.01 μ F 100V J	3679103120	
C166	Mylar 0.0039 μ F 100V J	3679392120	
C167	Mylar 0.01 μ F 100V J	3679103120	
C168	Mylar 0.005 μ F 100V J	3679152120	
C169	Electric SA 4.7 μ F 50V M	3479247971	
C170	Ceramic Tubular 0.047 μ F 50V J	3519473935	
C171	Electric SA 4.7 μ F 50V M	3479247971	
Connectors			
CNT101	Wafer 11P System CNT from DECK	4428511820	
CNT102	Wafer 10P Board to Board	4428550100	
CNT103	Wafer 12P Board to Board	4428550120	
CNT104	Wafer 8P Board to Board	4428550080	
CNT105	Wafer 10P Board to Board	4428550100	
CNT106	Assembly 2P 180mm to Posistor Board	436402183231	
CNT107	Assembly 6P 200mm to CNT Board	436406203221	
CNT108	Assembly 6P 200mm to Stand By Trans	436406203221	
CNT109	Wafer 5P	4428516410	
CNT110	Assembly 9P 120mm to Input Board	436209123332	
CNT111	Wafer 8P	4428516810	
CNT112	Wafer 2P	4428516110	
CNT113	Assembly 2P 180mm to Posistor Board	436402183231	
Diodes			
D101L/R	1N4148, Switching	2058306101	
D102L/R	1N4148, Switching	2058306101	
D103	Zener, 9.1V	2258599107	
D104	Bridge PBL 303	2058100146	
D105	1N4148, Switching	2058306101	
D106-111	1N4002	2058100135	
D112/113	Zener, 7.5V	2258599130	
D114	1N4148, Switching	2058306101	
D115/116	Zener, 8.2V	2258599123	

Ref. No.	Description	Mfr. Part No.	Remark
ICs			
IC101	TDA7250, Power AMP Driver	2178000001	
IC102	LM317, Regulator	2168600112	
IC103	NJU7305L, EQ Electronic VOL.	2168020112	
IC104	KIA4559S, V/C Input Buffer	2168206103	
IC105	KIA4559S, Echo LPF	2168206103	
IC106	KIA4559S, Echo LPF	2168206103	
IC107	MN3007, BBD	2168010103	
IC108	MN3101, BBD OSC	2168010102	
IC109	KIA4559S, V/C	2168206103	
IC110	KIA4559S, V/C	2168206103	
Resistors : All resistors are 1/5W carbon film $\pm 5\%$ tolerance, unless otherwise specified. M.O is Metal Oxide type. C is Cement type. M is Metal film type.			
R101L/R	22k ohm	3069223970	
R102L/R	910 ohm	3069911970	
R103L/R	2.7k ohm	3069272970	
R104L/R	27k ohm	3069273970	
R105L/R	20k ohm	3069203970	
R106L/R	15k ohm	3069153970	
R107L/R	390 ohm	3069391970	
R108L/R	56 ohm	3069560970	
R109L/R	10 ohm	3069100970	
R110L/R	390 ohm	3069391970	
R111L/R	56 ohm	3069560970	
R112L/R	10 ohm	3069100970	
R113L/R	0.18 ohm C. 3W	3059188682	
R114L/R	0.18 ohm C. 3W	3059188682	
R115L/R	56 ohm	3069560970	
R116L/R	56 ohm	3069560970	
R117	4.3k ohm	3069432970	
R118	3.9k ohm	3069392970	
R119L/R	22 ohm	3069220970	
R120L/R	22 ohm	3069220970	
R121L/R	22 ohm	3069220970	
R122L/R	22 ohm	3069220970	
R123	8.2k ohm	3069822970	
R124	33k ohm	3069333970	
R125	4.7k ohm	3069472970	
R126	47k ohm	3069473970	
R127/128	4.7k ohm	3069472970	
R129	470 ohm	3069471970	
R130	47k ohm	3069473970	
R131/132	33 ohm	3069330970	
R133	33 ohm M.O., 2W	3029330572	
R134	3.3 ohm M.O., 2W	3029339572	
R135	33k ohm	3069333970	
R136	47k ohm	3069473970	

Ref. No.	Description	Mfr. Part No.	Remark
R137	2k ohm	3069202970	
R138	220 ohm	3069221970	
R139	2.7k ohm	3069272970	
R140	10 ohm M.O., 2W	3029100570	
R141L/R	15k ohm	3069153970	
R142	7.5k ohm	3069752970	
R143	10k ohm	3069103970	
R144L/R	7.5k ohm	3069752970	
R145L/R	7.5k ohm	3069752970	
R146L/R	150k ohm	3069154970	
R147/ 148	470 ohm	3069471970	
R149	10k ohm	3069103970	
R150	15k ohm	3069153970	
R151/ 152	100 ohm	3069101970	
R153L/R	56k ohm	3069563970	
R154L/R	56k ohm	3069563970	
R155L/R	56k ohm	3069563970	
R156L/R	8.2k ohm	3069822970	
R157	4.7k ohm	3069472970	
R158	100k ohm	3069104970	
R159	4.7k ohm	3069472970	
R160L/R	100k ohm	3069104970	
R161	470 ohm	3069471970	
R162/ 163	100k ohm	3069104970	
R164/ 165	100 ohm	3069101970	
R166	100k ohm	3069104970	
R167	10k ohm	3069103970	
R168	180 ohm	3069181970	
R169	4.7k ohm	3069472970	
R170	5.6k ohm	3069562970	
R171	100 ohm	3069101970	
R172	100k ohm	3069104970	
R173	120k ohm	3069124970	
R174	43k ohm	3069433970	
R175	120k ohm	3069124970	
R176/ 177	56k ohm	3069563970	
R178	33k ohm	3069333970	
R179	120k ohm	3069124970	
R180	4.7k ohm	3069472970	
R181	2.2k ohm	3069222970	
R182	390k ohm	3069394970	
R183/ 184	5.6k ohm	3069562970	
R185/ 186	100k ohm	3069104970	
R187	180k ohm	3069184970	
R188/ 189	39k ohm	3069393970	
R190	5.6k ohm	3069562970	
R191	100k ohm	3069104970	
R192/ 193	39k ohm	3069393970	
R194	5.6k ohm	3069562970	
R195	100k ohm	3069104970	

Ref. No.	Description	Mfr. Part No.	Remark
R196	150k ohm	3069154970	
R197	4.7k ohm	3069472970	
R198	5.6k ohm	3069562970	
Transistors			
Q101L/R	2SC3853, Power AMP, Silicon, NPN	2028416108	
Q102L/R	2SA1489, Power AMP, Silicon, PNP	2028116105	
Q103L/R	KTA965, Driver, Silicon, PNP	2228106107	
Q104L/R	KIC2283, Driver, Silicon, NPN	2228406120	
Q105	KIA1015Y, Drwic ST-BY, Silicon, PNP	2208206105	
Q106/107	KIC1815Y, Drwic ST-BY, Silicon, NPN	2208606104	
Q108	KTC114YS, Mono Mute, Silicon, NPN	2208622106	
Q109	KTC114YS, Switching, Silicon, NPN	2208622106	
Q110	KTC1815Y, Switching, Silicon, NPN	2208606104	
Q111	KTA1015Y, Switching, Silicon, PNP	2208206105	
Q112	KT8834, Regulator, Silicon, PNP	2008106111	
Q113/114	KTC1815Y, LPF, Silicon, NPN	2208606104	
Other			
35	Regulator TR Heatsink, Alminum	7505206210	
36	Regulator TR Heatsink, Alminum	7505206230	
37	Terminal Speaker	4408104510	
.	PCB - Main	4002123900	

	PCB ASSEMBLY - BPF				054077123910	
Capacitors						
C201	Electric SA	1 μ F	50V	M	3479210971	
C202	Electric SA	0.22 μ F	50V	M	3479222871	
C203	Electric SA	0.1 μ F	50V	M	3479210871	
C204	Mylar	0.068 μ F	100V	J	3679683120	
C205	Mylar	0.033 μ F	100V	J	3069333120	
C206	Mylar	0.1 μ F	100V	J	3679103120	
C207 / 208	Mylar	0.0039 μ F	00V	J	3679392120	
C209	Mylar	0.01 μ F	100V	J	3679103120	
C210	Mylar	0.033 μ F	100V	J	3679333120	
C211	Mylar	0.068 μ F	100V	J	3679683120	
C212	Electric SA	0.1 μ F	50V	M	3479210871	
C213	Electric SA	0.22 μ F	50V	M	3479222871	
C214	Electric SA	1 μ F	50V	M	3479210971	
C215	Mylar	0.068 μ F	100V	J	3679683120	
C216	Mylar	0.047 μ F	100V	J	3679473120	
C217	Mylar	0.015 μ F	100V	J	3679153120	
C218	Mylar	0.0033 μ F	100V	J	3679332120	

Ref. No.	Description	Mfr. Part No.	Remark
C219	Mylar 0.0012 μ F 100V J	3679122120	
C220	Ceramic Tubular 680 pF 50V J	3519681935	
C221/222	Ceramic Tubular 270 pF 50V J	3519271935	
C223	Ceramic Tubular 680 pF 50V J	3519681935	
C224	Mylar 0.0012 μ F 100V J	3679122120	
C225	Mylar 0.0033 μ F 100V J	3679332120	
C226	Mylar 0.015 μ F 100V J	3679153120	
C227	Mylar 0.047 μ F 100V J	3679473120	
C228	Mylar 0.068 μ F 100V J	3679683120	
Connectors			
CNT104	Wafer 8P Board to Board	4428560080	
CNT105	Wafer 10P Board to Board	4428560100	
Resistors			
R201-213	820k ohm	3069824970	
R214-227	1k ohm	3069102970	
R228	100k ohm	3069104970	
R229	390 ohm	3069391970	
R230	15k ohm	3069153970	
R231	100k ohm	3069104970	
R232	390 ohm	3069391970	
R233	15k ohm	3069153970	
R234	100k ohm	3069104970	
R235	390 ohm	3069391970	
R236	15k ohm	3069153970	
R237	100k ohm	3069104970	
R238	390 ohm	3069391970	
R239	15k ohm	3069153970	
R240	100k ohm	3069104970	
R241	390 ohm	3069391970	
R242	15k ohm	3069153970	
R243	100k ohm	3069104970	
R244	390 ohm	3069391970	
R245	15k ohm	3069153970	
R246	100k ohm	3069104970	
R247	390 ohm	3069391970	
R248	15k ohm	3069153970	
R249	100k ohm	3069104970	
R250	390 ohm	3069391970	
R251	15k ohm	3069153970	
R252	100k ohm	3069104970	
R253	390 ohm	3069391970	
R254	15k ohm	3069153970	
R255	100k ohm	3069104970	
R256	390 ohm	3069391970	

Ref. No.	Description	Mfr. Part No.	Remark
R257	15k ohm	3069153970	
R258	100k ohm	3069104970	
R259	390 ohm	3069391970	
R260	15k ohm	3069153970	
R261	100k ohm	3069104970	
R262	390 ohm	3069391970	
R263	15k ohm	3069153970	
R264	100k ohm	3069104970	
R265	390 ohm	3069391970	
R266	15k ohm	3069153970	
R267	100k ohm	3069104970	
R268	390 ohm	3069391970	
R269	15k ohm	3069153970	
R270	820k ohm	3069824970	
Other			
.	PCB - BPF	4002123910	

	PCB ASSEMBLY - CNT	054077123920	
Capacitor			
C121	Electric SG 330 μ F 50V M	3479333171	
Connectors			
CNT601	Wafer 15P System, to Tuner	4358615501	
CNT602	Wafer 11P, Angle	4428525610	
CNT603	Wafer 7P, Angle	4428513470	
CNT604	Assembly 3P 300mm to Input Board	436203303332	
Diodes			
D601/602	1N4002, Rectifier	2208100135	
D603/604	Zener, 18V	2258599111	
D605	Zener, 9.1V	2258599107	
Resistors			
R601	180 ohm M.O., 1W	3029181470	
R602	20k ohm	3069203970	
R603	150 ohm M.O., 2W	3029151570	
R604	1k ohm	3069102970	

Ref. No.	Description	Mfr. Part No.	Remark
Other			
•	PCB - CNT	4002123920	

	PCB ASSEMBLY - H/P	054077123930	
Capacitors			
C901L/R	Ceramic Tubular 560 pF 50V J	3579561130	Dom, (FTZ)
Connector			
CNT109	Assembly 5P 250mm to Main Board	436205253332	
Resistors			
R901L/R R902L/R	1.5k ohm 270 ohm M.O., 1W	3069152970 3029271470	Dom, (FTZ)
Other			
•	PCB - H/P	4002123930	

	PCB ASSEMBLY - POSISTOR	054077123940	
Capacitor			
C171	Electric SA 10 μ F 50V M	3479210071	
Connectors			
CNT115 CNT114	Wafer 2P, Angle Not used	4428513420 •	
Diodes			
D117 D118	Zemer 11V. Regulator Not used	2258599122 •	

Ref. No.	Description	Mfr. Part No.	Remark
Resistors			
R903	100 ohm	3069101970	
R904	4.7k ohm	3069472970	
R905	47k ohm	3069473970	
R906	Not used	.	
R907	1.5k ohm	3069152970	
R908	Not used	.	
Transistors			
Q115	KTA56, Switching, Silicon, PNP	2208606113	
Q116	KTC1815V, Switching, silicon, NPN	2208606104	
Q117	KTC2283, Regulator, Silicon, NPN	2208406120	
Q118	Not used	.	
Posistor			
POS101	Posistor	2438012200	
Other			
.	PCB - Posistor	4002123940	
PCB ASSEMBLY - S / TRANS			
	PCB ASSEMBLY - S / TRANS	054077123950	
Other			
.	PCB - S / TRANS	4002123950	
PCB ASSEMBLY - FRONT			
	PCB ASSEMBLY - FRONT	054077124001	
Capacitors			
C301	Electric SG	100 μ F 10V M	3479310121
C302	Ceramic Tubular	0.01 μ F 50V J	3519103915
C303	Super Cap	0.047 μ F 5.5V J	3439247312
C304/305	Electric SA	0.33 μ F 50V M	3479233871
C306	Electric SG	33 μ F 25V M	3479333041
C307-310	Ceramic Tubular	0.047 μ F 50V J	3519473935
C311	Electric SG	33 μ F 25V M	3479333041
C312/313	Ceramic Tubular	0.047 μ F 50V J	3519473935
C314	Electric SG	33 μ F 25V M	3479333041
C315/316	Mylar	0.022 μ F 100V J	3679223120
C317	Electric SA	10 μ F 50V M	3479210071

Ref. No.	Description	Mfr. Part No.	Remark
C318/319	Mylar 0.01 μ F 100V J	3679103120	
C320	Electric SA 10 μ F 50V M	3479210071	
C321/322	Mylar 0.0022 μ F 100V J	3679222120	
C323	Electric SA 10 μ F 50V M	3479210071	
C324/325	Mylar 0.001 μ F 100V J	3679102120	
C326/327	Electric SA 10 μ F 50V M	3479210071	
C328/329	Mylar 0.047 μ F 100V J	3679473120	
C330	Ceramic Tubular 100 pF 50V J	3519101935	
C331	Ceramic Tubular 0.047 μ F 50V J	3519473935	
Connectors			
CNT301	Slat wire 11P 250mm to CNT Board	436211253332	
CNT302	Slat wire 8P 140mm to VOL Board	436208143332	
Diodes			
D301-303	1N4148, Switching	2058522101	
D304	Zener, 5.1V	2208599103	
D305-315	1N4148, Switching	2058522101	
D316/317	Zener, 7.5V	2258599130	
D318	Zener, 5.1V	2208599103	
LED301-306	SLR 34GC-82F 215, Green	2384111301	
LED307/308	SLR 34GC-70F 140, Green	2371140301	
LED309-314	SLR 34GC-82F 215, Green	2384111301	
LED315-317	SLR 34GC-70F 140, Green	2371140301	
FIP			
FP301	FL FIP 15AW 16Y	2328130927	
ICs			
IC301	TMP 87CC 70F DWP703	2138307149	
IC302	GD4066, Switching	2138001101	
IC303	MC14094, Shift Register	2138009115	
IC304	LM324, OP AMP	2168000113	
IC305	LM324, OP AMP	2168000113	

Ref. No.	Description	Mfr. Part No.	Remark
Resistors			
R301-304	1.2k ohm	3069122970	
R305	1.5k ohm	3069152970	
R306	220 ohm	3069221970	
R307/308	470 ohm	3069471970	
R309	1k ohm	3069102970	
R310	1.8k ohm	3069182970	
R311-315	1k ohm	3069102970	
R316-318	1.8k ohm	3069182970	
R319-325	100k ohm	3069104970	
R326	39 ohm	3069390970	
R327	390 ohm	3069391970	
R328	1M ohm	3069105970	
R329	5.6k ohm	3069562970	
R330	390 ohm	3069391970	
R331	47k ohm	3069473970	
R332	10k ohm	3069103970	
R333	22k ohm	3069223970	
R334	220k ohm	3069224970	
R335	22k ohm	3069223970	
R336-338	100k ohm	3069104970	
R340	1k ohm	3069102970	
R341	15k ohm	3069153970	
R342	1.2k ohm	3069122970	
R343	51k ohm	3069513970	
R344	100 ohm	3069101970	
R345	5.6k ohm	3069562970	
R346	68k ohm	3069683970	
R347	20k ohm	3069203970	
R348	1.5k ohm	3069152970	
R349	75k ohm	3069753970	
R350	100 ohm	3069101970	
R351	5.6k ohm	3069562970	
R352	68k ohm	3069683970	
R353	20k ohm	3069203970	
R354	1.5k ohm	3069152970	
R355	51k ohm	3069513970	
R356	100 ohm	3069101970	
R357	5.6k ohm	3069562970	
R358	68k ohm	3069683970	
R359	18k ohm	3069183970	
R360	1.5k ohm	3069152970	
R361	56k ohm	3069563970	
R362	100 ohm	3069101970	
R363	5.6k ohm	3069562970	
R364	68k ohm	3069683970	
R365	18k ohm	3069183970	
R366	1k ohm	3069102970	
R367	51k ohm	3069513970	

Ref. No.	Description	Mfr. Part No.	Remark
R368	100 ohm	3069101970	
R369	10k ohm	3069103970	
R370	68k ohm	3069683970	
R371	18k ohm	3069183970	
R372	1.5k ohm	3069152970	
R373	62k ohm	3069623970	
R374	100 ohm	3069101970	
R375	10k ohm	3069103970	
R376	68k ohm	3069683970	
R377	20k ohm	3069203970	
R378	1.3k ohm	3069132970	
R379	75k ohm	3069753970	
R380	100 ohm	3069101970	
R381	10k ohm	3069103970	
R382	68k ohm	3069683970	
R383	1.2k ohm	3069122970	
R384	20k ohm	3069203970	
R385/386	270ohm	3069271970	
Resonator			
RES301	Resonator, 8MHz	3938131590	
Transistors			
Q301-313	KTC114YS, LED Drive, Silicon, NPN	2208622106	
Other			
11 •	Switch Tact PCB - Front	4658003710 4002124001	

	PCB ASSEMBLY - INPUT	054077124010	
Capacitors			
C401L/R	Ceramic Tubular	22 pF 50V J	3519220935
C402L/R	Ceramic Tubular	100 pF 50V J	3519101935
C403L/R	Electric SA	4.7 μF 50V M	3479247971
C404L/R	Ceramic Tubular	10 vpF 50V J	3519100935
C405L/R	Electric SA	10 μF 50V M	3479210071
C406L/R	Ceramic Tubular	2200 pF 50V J	3519222915
C407L/R	Mylar	0.0018 μF 100V J	3679182120
C408L/R	Mylar	0.0056 μF 100V J	3679562120

Ref. No.	Description	Mfr. Part No.	Remark
C409L/R	Electric SA 0.68 μ F 50V M	3479268871	Dom, (FTZ) Dom, (FTZ)
C410L/R	Mylar 0.056 μ F 100V J	3679563120	
C411/412	Electric SG 22 μ F 25V M	3479322041	
C413	Ceramic Tubular 0.047 μ F 50V J	3519473935	
C414L/R	Ceramic Tubular 100 pF 50V J	3519101935	
C415L/R	Ceramic Tubular 100 pF 50V J	3519101935	
C416-419	Electric SG 22 μ F 25V M	3479322041	
C420L/R	Mylar 0.22 μ F 100V J	3679224297	
C421L/R	Electric SA 1 μ F 50V M	3479210971	
C422L/R	Electric SA 10 μ F 50V M	3479210071	
C423/424	Electric SG 22 μ F 25V M	3479322041	
C425	Electric SA 1 μ F 50V M	3479210971	
C426	Electric SG 22 μ F 25V M	3479322041	
C427	Ceramic Tubular 1000 pF 50V J	3519102935	
C428L/R	Ceramic Tubular 330 pF 50V J	3519330935	
C429L/R	Electric SA 10 μ F 50V M	3479210071	
C430L/R	Electric SA 4.7 μ F 50V M	3479247971	
C431/432	Electric SA 10 μ F 50V M	3479210071	
C433/434	Electric SG 47 μ F 25V M	3479247041	
Coils			
L401L/R	Inductor 50mH	2648601470	Dom, (FTZ)
Connectors			
CNT401	Wafer 13P System Connector(White)	4358613501	Dom.G
CNT402	Wafer 12P to Main Board	4428560120	
CNT403	Wafer 9P	4428516810	
CNT404	Wafer 3P	4428516210	
CNT405	Wafer 16P	4428526285	
CNT406	Wafer 10P to Main Board	4428560100	
CNT407	Assembly 2P to Mono Board	436402183231	
Diodes			
D401	1N4148, Switching	2058322101	
D402(J448)	Zener, 5.1V	2258599103	
ICs			
IC401	KIA4559S, Phono AMP	2168206103	
IC402	LC7822, Input Function	2168017139	
IC403	KIA4559S, Mixer AMP	2168206103	
IC404	LC7823, Switching	2168017140	
IC405	KIA4559S, X-Bass AMP	2168206103	
IC406	KIA4559S, VOL AMP	2168206103	
IC407	KIA4559S, Mono Buffer	2168206103	

Ref. No.	Description	RS Part No.	Mfr. Part No.
Resistors			
R401L/R	1k ohm	3069102970	
R402L/R	47k ohm	3069473970	
R403L/R	820 ohm	3069821970	
R404L/R	560k ohm	3069564970	
R405L/R	43k ohm	3069433970	
R406L/R	470 ohm	3069471970	
R407L/R	100k ohm	3069104970	
R408/409	100 ohm	3069101970	
R410L/R	1k ohm	3069102970	
R411L/R	47k ohm	3069473970	
R412L/R	2.2k ohm	3069222970	
R413	100 ohm	3069101970	
R414	47 ohm	3069470970	
R415L/R	4.7k ohm	3069472970	
R416L/R	3.3k ohm	3069332970	Dom, G
R416L/R	Jumper	.	A, D, E
R417L/R	10k ohm	3069103970	Dom, G
R417L/R	k ohm	3069000970	A, D, E
R418L/R	1k ohm	3069102970	
R419L/R	20k ohm	3069203970	Dom, G
R419L/R	4.7k ohm	3069203970	A, D, E
R420	100 ohm	3069101970	
R421L/R	560 ohm	3069561970	
R422L/R	10k ohm	3069103970	
R423L/R	6.8k ohm	3069682970	
R424L/R	2.4k ohm	3069242970	
R425L/R	10k ohm	3069103970	
R426-429	100 ohm	3069101970	
R430	100k ohm	3069104970	
R431L/R	4.7k ohm	3069472970	
R432L/R	Not used	.	
R433	560 ohm	3069561970	
R434	1k ohm	3069102970	
R435	2.2k ohm	3069222970	
R436	10k ohm	3069103970	
R437	2.2k ohm	3069222970	
R438	270 ohm	3069271970	
R439	100 ohm	3069101970	
R440/441	47 ohm	3069470970	
R442	1k ohm	3069102970	
R443	100k ohm	3069104970	
R444	1k ohm	3069102970	
R445	100k ohm	3069104970	
R446	10k ohm	3069103970	
R447	3.3k ohm	3069332970	
R448-450	1k ohm	3069102970	

Ref. No.	Description	RS Part No.	Mfr. Part No.
Transistors			
Q401L/R Q402 Q403	KTD1302, Mute, Silicon, NPN KTA1015, Mute, Silicon, PNP KTD1302, Mute, Silicon, NPN	2208606112 2208206105 2208606112	
Others			
15 17 •	Fastener, Nylon94 V-0 RCA Jack (4P) PCB - Input	6528301910 4438108610 4002124010	

	PCB ASSEMBLY - VOLUME	O54077124020	
Capacitors			
C501-503 C504	Electric SG Ceramic Tubular	47 μ F 25V M 0.047 μ F 50V J	3479347071 3519473935
Connector			
CNT302	Wafer 8P, Angle	4428525580	
Diode			
D501	Zener, 5.1V	2258599103	
ICs			
IC501 IC502	TA7219S, Motor Driver KIA4559S, EQ Display L / R Mixer	2168007204 2168206103	
Resistors			
R501 R502 R503 R504 R505L/R R506L/R R507	10 ohm 8.2k ohm 3.9k ohm 560 ohm 2.2k ohm 47k ohm 330k ohm	3069100970 3069822970 3069392970 3069561970 3069222970 3069473970 3069334970	

Ref. No.	Description	Mfr. Part No.	Remark
Others			
12 •	VR Motor PCB - Volume	3208064310 4002124020	

	PCB ASSEMBLY - MIC	054077124030	Dom, G
Connectors			
CNT111 CNT112	Assembly 8P 120mm to Main Board Slat wire 2P 140mm to Main Board	436208123132 436202127732	Dom, G Dom, G
Others			
43 •	VR Mic Mix PCB - MIC	3208064010 4002124030	Dom, G Dom, G

	PCB ASSEMBLY - SELECTOR	054077124040	
Fuses			
F101 F101 F101 F102	NB 3.5A 250V, 110V Fuse NB 3A 125V, UL/CSA, 120V Fuse T 1.6A 250V NB 1.5A 250V, 220V Fuse	5508202630 5508202621 5508302335 5508202230	Dom A D, E, G Dom
Other			
•	PCB - Selector	4002124040	

	PCB ASSEMBLY - MONO	054077124050	
Capacitor			
C435	Ceramic Tubular 100 pF 50V J	3519101935	Dom, (FTZ)
Resistor			
R451	1k ohm	3069102970	

Ref. No.	Description	Mfr. Part No.	Remark
Other			
•	PCB - Mono	4002124050	

	PCB ASSEMBLY - P / TRANS	054077124060	
Connectors			
WO1	Wire 1P Black	4359552020	Dom
WO2	Wire 1P Brown	4359552120	
WO3	Wire 1P Yellow	4359552420	Dom
WO4	Wire 1P Red	4359552220	
PowerTrans			
34	Power Trans. 110V / 220V 60Hz	2828098201	Dom
34	Power Trans. 120V 60Hz	2828098901	A
34	Power Trans. 230V 50Hz	2828098301	D
34	Power Trans. 240V 50Hz	2828099101	E
34	Power Trans. 220V 50Hz	2828099001	G
Resistor			
RO1	3.3 M ohm M.O., 1/2W	3009335373	
Other			
•	PCB - P / TRANS	4002124060	

	PCB ASSEMBLY - BALANCE	054077124070	A, D, E
Connector			
CNT501	Assembly 3P 160mm to Volume Board	436403163232	A, D, E
Other			
•	PCB - Balance	4002124070	A, D, E

MECHANICAL PARTS LIST

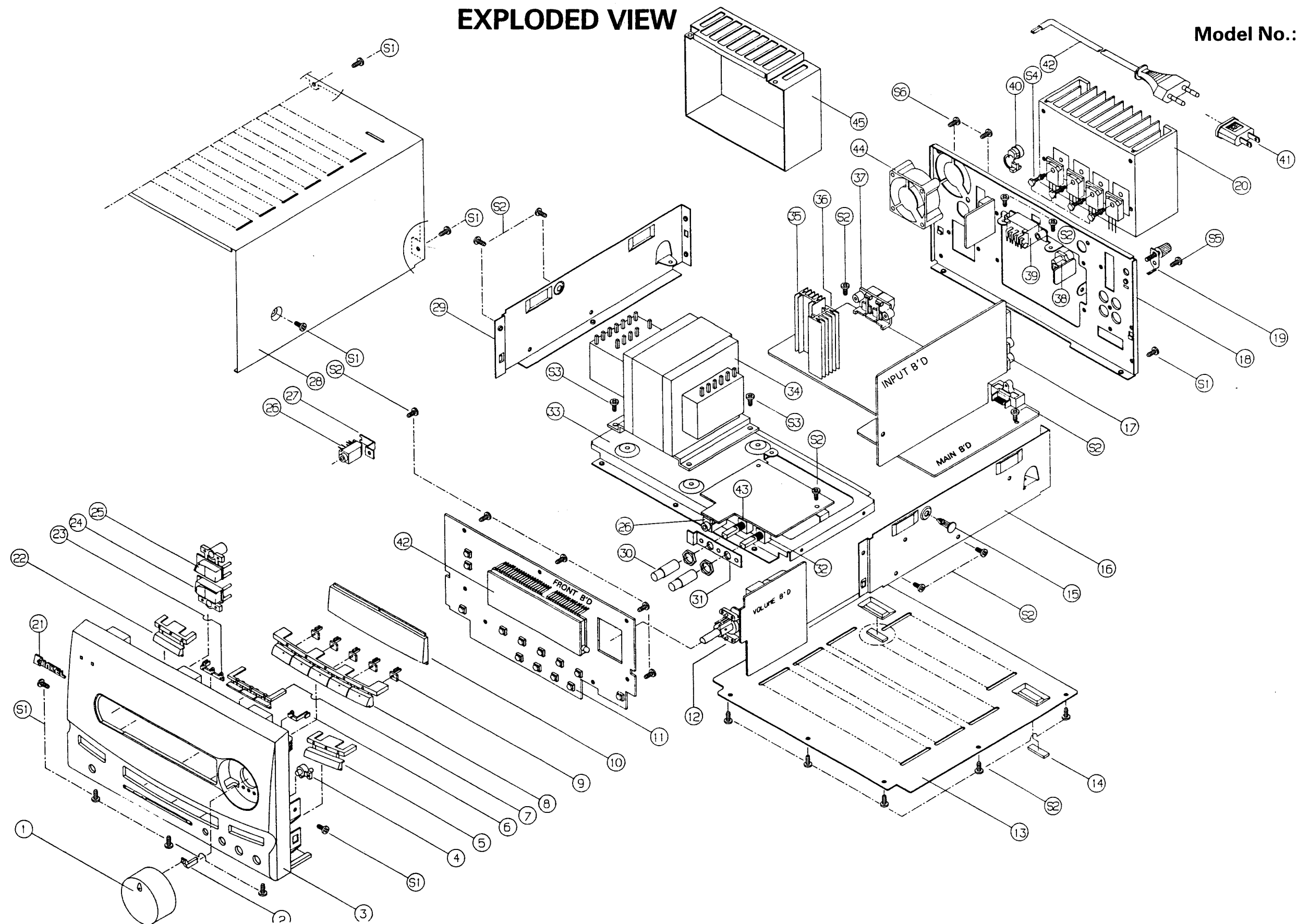
Ref. No.	Description	Q'ty	Mfr. Part No.	Remark
1	Knob Main, ABS. Black	1	048543046611	
2	Indicator VOL, Natural	1	8555042310	
3	Panel Front, ABS. Black	1	048501025911	Dom
3	Panel Front, ABS. Black	1	048501025921	A, D, E, F
3	Panel Front, ABS. Black	1	048501025912	B
4	Button Voice, Milk	1	8545107710	
5	Button Selector, ABS. Black	1	045845107611	Dom
5	Button Selector, ABS. Black	1	045845107612	A, B, C, D, E, F
6	Indicator 1Key, Natural	1	8555042110	
7	Button 3Key, Black	1	8545107810	
8	Button 5Key, Black	1	048543046711	
9	Indicator Fun, Natural	5	8555042410	
10	Window Display, Acryl. Wine	1	8553016510	
11	Switch Tact	13	4658003710	
12	VR Motor	1	3208064310	
13	Cover Botton, Secc 0.8t. Black	1	16122418210	
14	Foot Rubber, Bumpon	1	6715021210	
15	Fastener, Nylon94 V-0	1	6528301910	
16	Frame (R), Secc 0.8t	1	6123622420	
17	RCA Jack (4P)	1	4438108610	
18	Chassis Back, Secc 0.8t	1	046102034411	Dom
18	Chassis Back, Secc 0.8t	1	046102034421	A
18	Chassis Back, Secc 0.8t	1	046102034431	B
18	Chassis Back, Secc 0.8t	1	046102034441	C
18	Chassis Back, Secc 0.8t	1	046102034451	D
18	Chassis Back, Secc 0.8t	1	046102034461	E
18	Chassis Back, Secc 0.8t	1	046102034471	F
18	Chassis Back, Secc 0.8t	1	046102034481	G
19	System Ground	1	4408104910	
20	Heatsink Power, Aluminum. Black	1	7503014610	
21	Badge, MP211. Gold	1	048535038311	Dom
21	Badge, MP211. Gold	1	048535038411	A, B, C, D, E, F
22	Button Power, ABS. Black	1	048545107511	Dom
22	Button Power, ABS. Black	1	048545107512	A, B, C, D, E, F
23	Indicator 3Key, ABS. Natural	1	8555042210	
24	Button X-Bass, PC. Milk	1	048543048611	
25	Button Surround, PC. Milk	1	048543046811	Dom
25	Button Surround, PC. Milk	1	048543046812	A, B, C, D, E, F, G
26	Jack Phones	1	4438006910	Dom
27	Bracket Jack, Secc 1t	1	6505130810	A, B, C, D, E, F, G
28	Cover Top, Secc 0.8t. Black	1	046122025011	
29	Frame (L), Secc 0.8t	1	6123622410	
30	Knob Mic, ABS. Black	1	048545107911	
31	Bracket VR, Secc 1t	1	6505125320	
32	VR Echo Level	1	3208052210	
33	Frame Center, Secc 1t	1	6123622510	
34	Power Trans, 110V/220V 60Hz	1	2828098201	Dom
34	Power Trans, 120V 60Hz	1	2828098901	A
34	Power Trans, 230V 50Hz	1	2828098301	D

Ref. No.	Description	Q'ty	Mfr. Part No.	Remark
34	Power Trans, 240V 50Hz	1	2828099101	E G
34	Power Trans, 220V 50Hz	1	2828099001	
35	Regulator TR Heatsink, Alminum	1	17505206210	
36	Regulator TR Heatsink, Alminum	1	17505206230	
37	Terminal Speaker	1	4408104510	
38	Jack RCA (1P)	1	4438110010	
39	Voltage Selector	1	4618006510	
40	Cord Stopper	1	6513000310	
40	Cord Stopper	1	6518000111	
41	AC Adapter	1	4428300310	
42	Cord AC Power	1	4308001610	Dom A,B C,D,F,G E
42	Cord AC Power	1	4308003910	
42	Cord AC Power	1	4308000430	
42	Cord AC Power	1	4308007610	
43	VR Mic Mix	1	3208064010	
44	DC Brushless Fan	1	7318000310	
45	Cover Heatsink, Secc 0.8t	1	046503026711	
45	Cover Heatsink, Secc 0.8t	1	046503026721	
45	Cover Heatsink, Secc 0.8t	1	046503026731	
45	Cover Heatsink, Secc 0.8t	1	046503026741	
45	Cover Heatsink, Secc 0.8t	1	046503026751	
45	Cover Heatsink, Secc 0.8t	1	046503026761	
45	Cover Heatsink, Secc 0.8t	1	046503026771	
Hardware Kit				
Internals				
S1	Screw #2 BTC 3x8 ZNB	17	8109230083	
S2	Screw #2 WPTC 3x8 ZNY	4	8109230081	
S3	Screw SAM 4x6 ZNY	4	8119430061	
S4	Screw HEX MSPW 3x12 ZNY	4	8099130121	
S5	Screw #2 PTC 4x6 ZNY	1	8119240061	
S6	Screw BSAM 4x12 ZNB	2	8109440123	
Externals				
S1	Screw #2 BTC 3x8 ZNB	17	8109230083	

NOTES

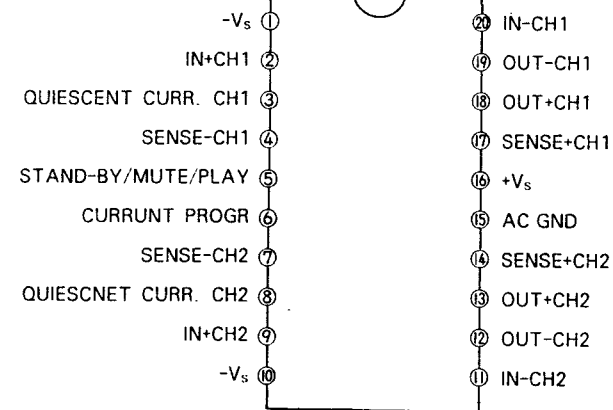
EXPLODED VIEW

Model No.:AX - 77R

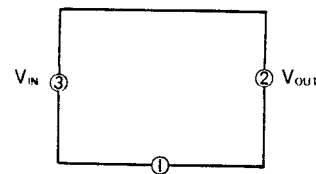


IC LEAD IDENTIFICATION

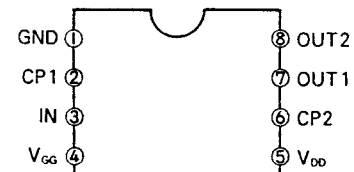
TDA7250: IC101



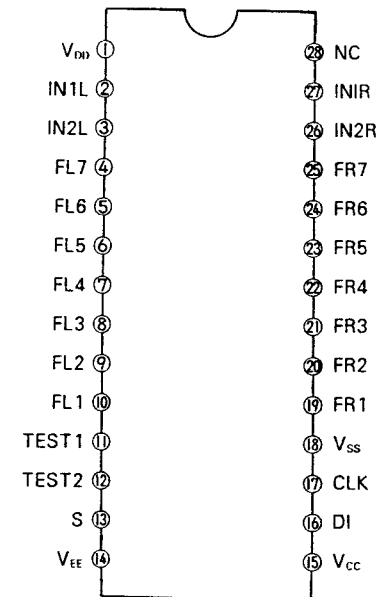
LM 317: IC102



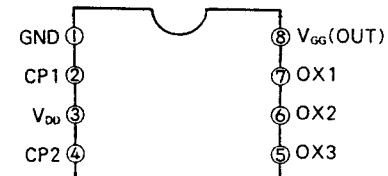
MN 3007:IC107



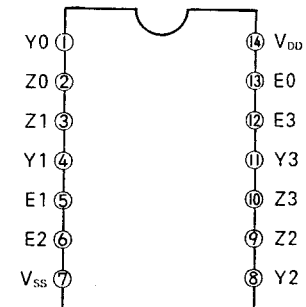
NJU 73052:IC103



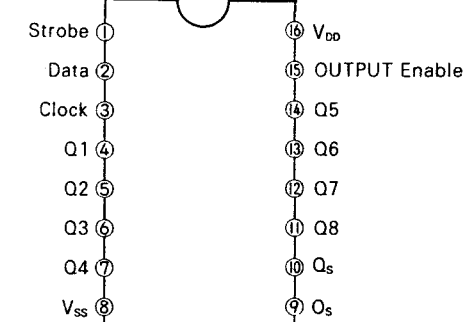
MN3101:IC108



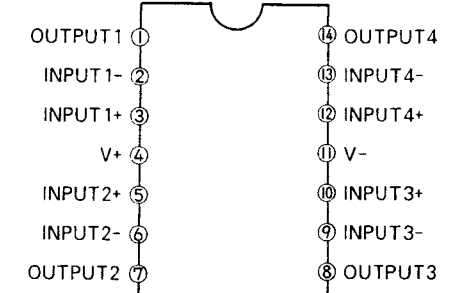
GD 4066B: IC302



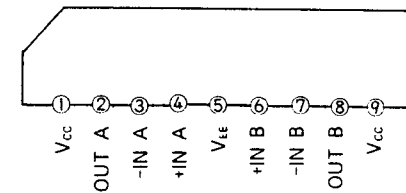
MC14094:IC303



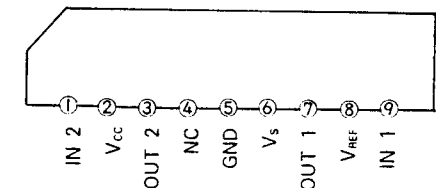
LM324: IC304, IC305



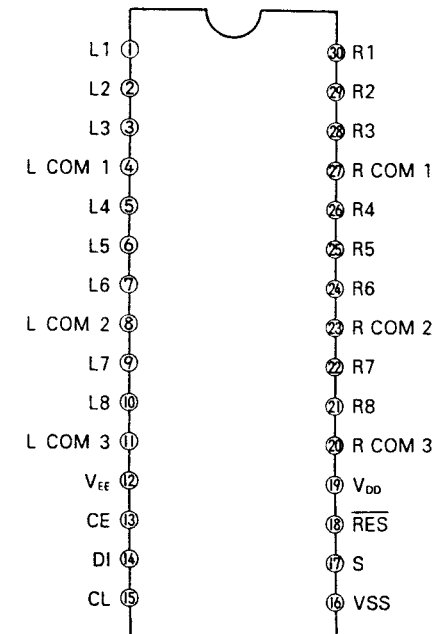
KIA 4559S : IC104, IC105, IC106, IC109, IC110, IC111, IC401, IC403, IC405, IC406, IC407, IC502



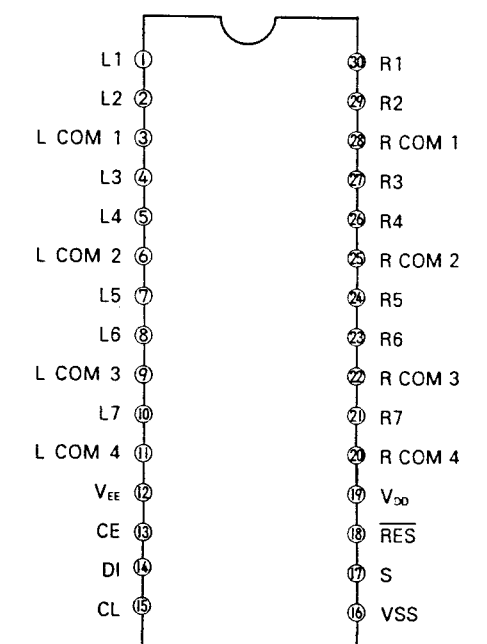
TA7291S:IC501



LC 7822:IC402



LC7823:IC404



SEMICONDUCTOR VOLTAGE CHART

Ref No.		DC
IC 101	1	-36.5V
	2	0V
	3	-34.2V
	4	-35.6V
	5	-26.2V
	6	-32.3V
	7	-35.6V
	8	-34.2V
	9	0V
	10	-35.6V
	11	0V
	12	-0.5V
	13	0.5V
	14	35.2V
	15	0V
	16	35.3V
	17	35.2V
	18	0.5V
	19	-0.5V
	20	0V
IC 102	1	11.1V
	2	12.5V
	3	18.2V
IC 103	1	7.6V
	2-10	0V
	11-13	7.6V
	14	-7.5V
	15	5V
	16-27	0V
IC 104	28	NC
	1	12.7V
	2-4	0V
	5	-12.4V
	6-8	0V
IC 105	9	12.7V
	1	8.2V
	2-4	0V
	5	-8.2V
	6-8	0V
IC 106	9	8.2V
	1	8.2V
	2-4	0V
	5	-8.2V
	6-8	0V
IC 107	9	8.2V
	1	8.2V
	2	-0.3V
	3	0V
	4	-7.3V
	5	-8.2V
	6	-0.3V

Ref No.		DC
IC 107	7/8	-0.4V
IC 108	1	7.6V
	2	-0.3V
	3	-8.2V
	4	-0.3V
	5	-1V
	6	0.2V
	7	-0.5V
	8	-7.3V
IC 109	1	12.7V
	2-4	0V
	5	-12.4V
	6-8	0V
	9	12.7V
IC 110	1	12.7V
	2-4	0V
	5	-12.4V
	6-8	0V
	9	12.7V
IC 111	1	11.1V
	2-4	0V
	5	-10.7V
	6-8	0V
	9	11.1V
IC 301	1	NC
	2	5.2V
	3	NC
	4	0V
	5	NC
	6/7	0V
	8	5V
	9-11	NC
	12	5V
	13	2.1V
	14	2.3V
	15-17	0V
	18-24	5.4V
	25-28	0V
	29	4.9V
	30/31	0V
	32	4.9V
	33	5.0V
	34	NC
	35-49	-34.0V
	50	4.9V
	51-60	36.5V
	61	-33.5V
	62	4.9V
	63-65	NC

Ref No.		DC
IC 301	66	-36.5V
	67/68	5.2V
	69/72	NC
	73-38	0.3V
	79	0V
	80	5.2V
IC 302	1-5	0V
	6	4.8V
	7/8	0V
	9-13	NC
	14	4.8V
	15/16	5.0V
IC 303	1-4	0.3V
	5-7	0V
	8-12	NC
	13/14	5.2V
IC 304	1-3	0.7V
	4	7.7V
	5-10	0.7V
	11	-7.6V
	12-14	NC
IC 305	1-3	0.7V
	4	7.7V
	5-10	0.7V
	11	-7.6V
	12-14	0.7V
IC 401	1	12.0V
	2-4	0V
	5	-11.7V
	6-8	0V
	9	12.0V
IC 402	1-11	0V
	12	-12.0V
	13-17	0V
	18	12.3V
	19	12.4V
	20-30	0V
IC 403	1	11.9V
	2-4	0V
	5	-11.5V
	6-8	0V
	9	11.9V
IC 404	1-11	0V
	12	-12V
	13-17	0V
	18	12.0V

Ref No.		DC
IC 404	19	12.4V
	20-30	0V
IC 405	1	12.0V
	2-4	0V
	5	-11.7V
	6-8	0V
	9	12.0V
IC 406	1	12.0V
	2-4	0V
	5	-11.7V
	6-8	0V
	9	12.0V
IC 407	1	12.0V
	2-4	0V
	5	-11.7V
	6-8	0V
	9	12.0V
IC 501	1	0V
	2	12.4V
	3	0V
	4	NC
	5	0V
	6	12.4V
	7	0V
	8	4.0V
	9	0V
IC 502	1	12.5VC
	2-4	NC
	5	-12.1V
	6-8	0V
	9	12.5V

TUNER TX-77R SPECIFICATIONS

FM Section

Tuning Range	
USA Version	87.5-107.9MHz
Europe / Australia Version	87.5-108MHz
Scanning Frequency Interval(Auto / Manual)	
USA Version	200kHz
Europe / Australia Version	50kHz
Usable Sensitivity IHF at S+N+D / N+D=30dB	2.5 μ V(13.3dBf)
50dB Quieting Sensitivity IHF,	
Stereo	50 μ V(39dBf)
THD at 1kHz, 100% MOD,	
Mono	0.3%
Stereo	0.5%
Stereo Separation at 1kHz	40dB
Signal to Noise Ratio IHF,	
Mono	70dB
Stereo	68dB
Frequency Response	
20Hz~15,000Hz	+0.5 / -3dB

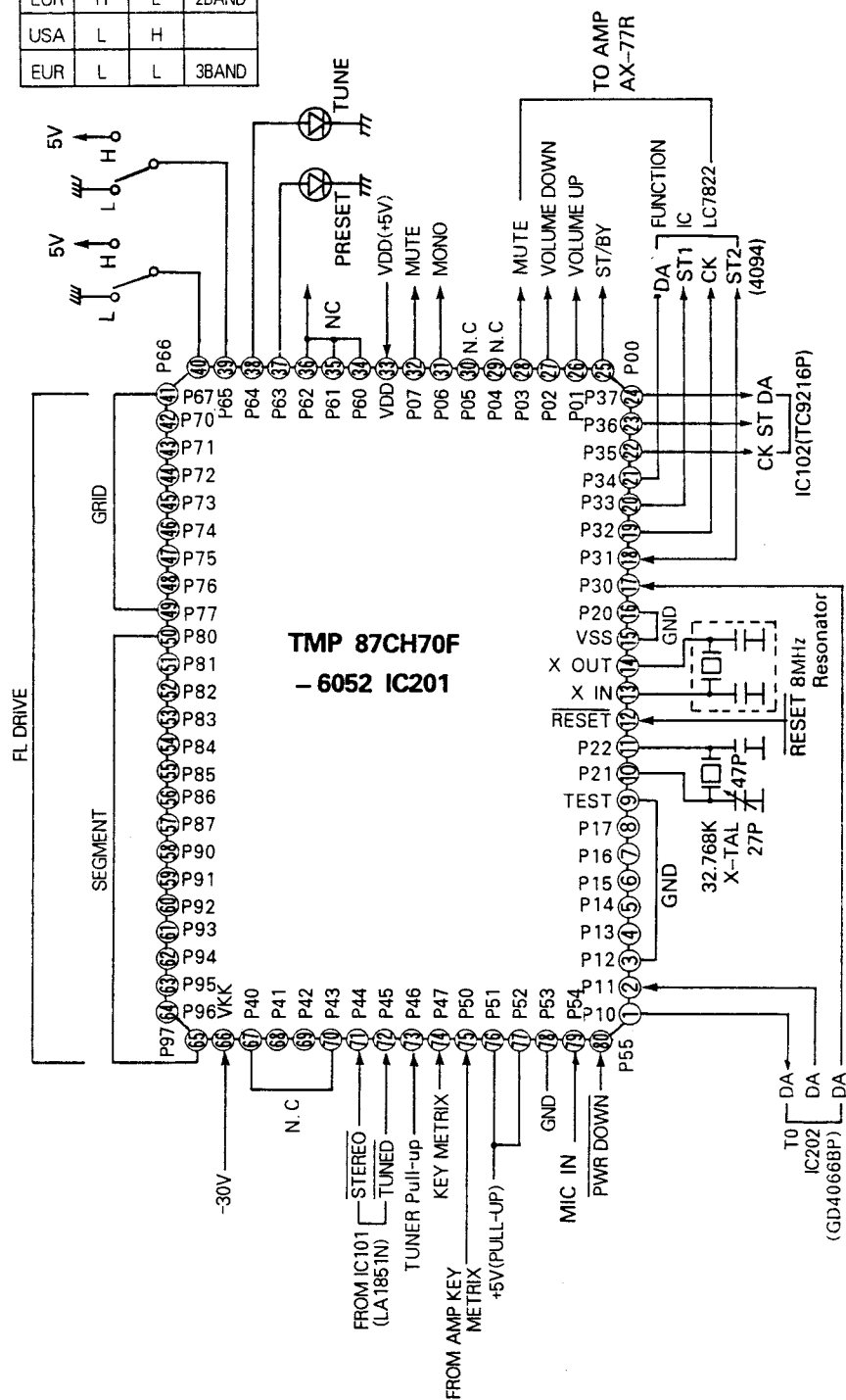
AM Section

Tuning Range	
USA Version	520 - 1710kHz
Europe / Australia Version	522 - 1611kHz
Scanning Frequency Interval(Auto / Manual)	
USA Version	10kHz
Europe / Australia Version	9kHz
Usable Sensitivity	
IHF at S+N=20dB, Loop antenna	1000 μ V / m
Signal to Noise Ratio, 30% MOD.	40dB
Dimensions	235(W)×73(H)×240(D)mm
Weight(Net)	1.5kg (3.3lb)

Note : Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the European standard, and provides information on regional circuit modification through use of alternate schematic diagram and information on regional component variations through use of parts list. Design and specifications subject to change without notice for improvement.

8-bit CMOS Microprocessor, TMP 87CH70F-6052

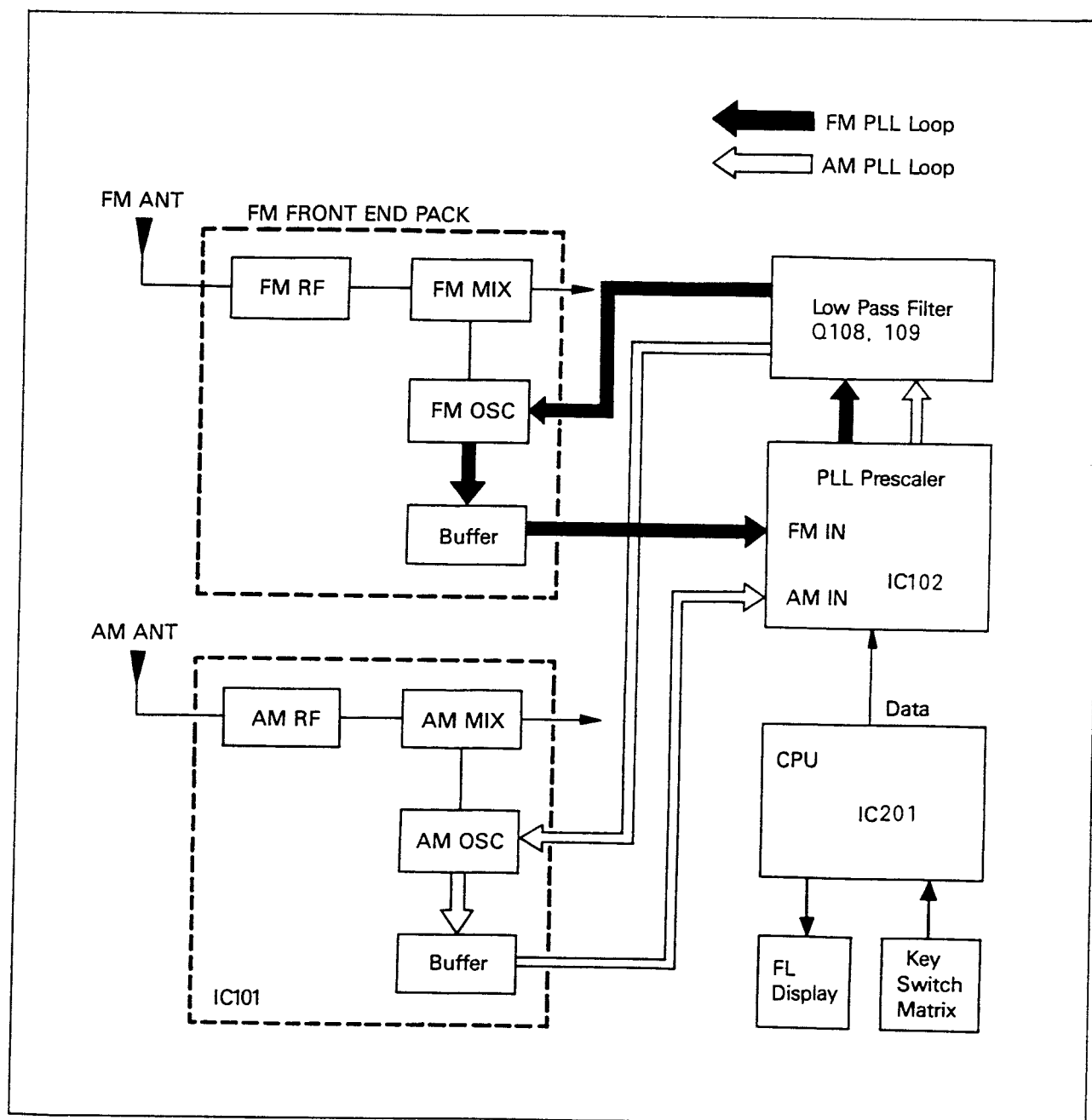
	39	40	
KOR	H	H	
EUR	H	L	2BAND
USA	L	H	
EUR	L	L	3BAND



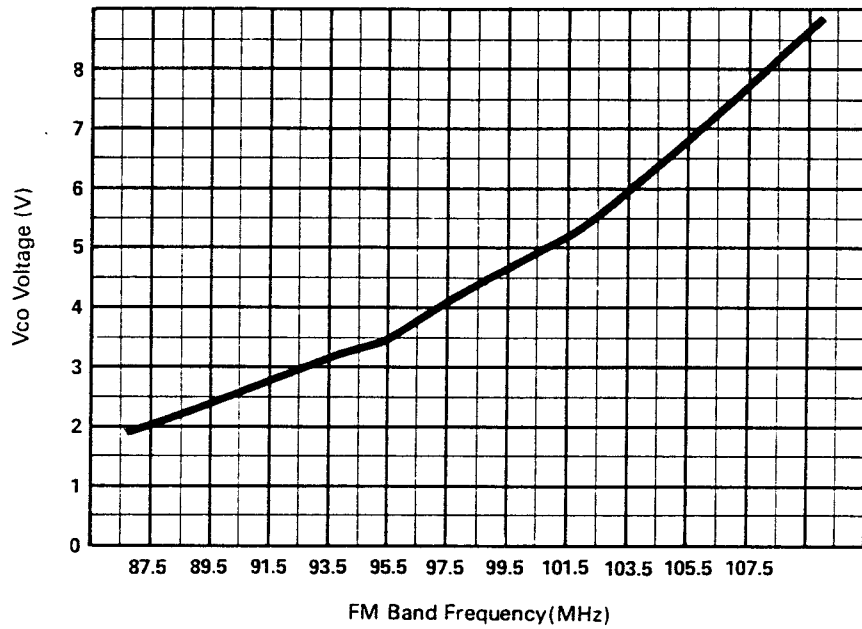
Input and Output Terminal Functions

PIN NAME	Input/Output	FUNCTION		
P07~P00	I/O	Two 8-bit programmable input/output ports(tri-state). Each bit of these ports can be individually configured as an input or an output under software control.		
P17, P16, P14	I/O			
P15(TC2)	I/O(Input)		Timer/Counter 2 input	
P13(DVO)	I/O(Output)		Divider output	
P12(INT2/TC1)	I/O(Input)	During reset, all bits are configured as inputs. When used as a divider output, the latch must be set to "1".	External interruptinput 2 or timer/Counter 1 input	
P11(INT1)			External interruptinput 1	
P10(INT0)			External interruptinput 0	
P22(XTOUT)	I/O(Output)	3-bit input/output port with latch. When used as an input port, the latch must be set to "1".	Resonator connecting pins(32.8kHz). For inputting external clock, XTIN is used and XTOUT is opened.	
P21(XTIN)	I/O(Input)		External interrupt input 5 or STOP mode release signal input.	
P20(INTS/STOP)				
P37(HSO)	I/O(Output)	8-bit input/output port with latch. When used as an input port, a HSO output, a SIO input/output, a timer/counter input, or an interrupt input, the latch must be set to "1".	HSO serial data output	
P36	I/O			
P35(HSCK)	I/O(Output)		HSO serial clock output	
P34(SO)			SIO serial data output	
P33(SI)	I/O(Input)		SIO serial data input	
P32(SCK)	I/O(I/O)		SIO serial clock input/output	
P31(TC4)	I/O(Input)		Timer/Counter 4 input	
P30(INT3/TC3)			External interruptinput 3 or Timer/Counter 3 input	
P47(CIN4/KEY7) P46(CIN5/KEY6)	I/O(Input)		8-bit input/output port with latch. When used as an input port, the latch must be set to "1".	Comparator inputs or Key scan inputs
P45(KEY5 ~ P40(KEY0)				Key scan inputs
P55(PWM/PDO)	I/O(Output)	6-bit input/output port with latch. When used as an input port, a comparator input, or a PWM/PDO output, the latch must be set to "1".	8-bit PWM output or b-bit programmable divider	
P54	I/O			
P53(CIN0) ~P50(CIN3)	I/O(Input)		Comparator inputs	
P67(G8)~ P60(G15)	I/O(Output)	Three 8-bit high breakdown voltage I/O ports with the latch. When used as a VFT driver output, the latch must be cleared to "0".	VFT digit driver outputs	
P77(G0)~ P70(G7)			VFT segment driver outputs (Key strobe outputs)	
P97(S15)~ P90(S8)				
P87(S7)~ P80(S0)	Output (Output)	8-bit high breakdown voltage output port with latch. When used as VFT driver output, the latch must be cleared to "0".		
XIN, XOUT	Input, Output	Resonator connecting pins for high-frequency clock. For inputting external clock, XIN is used and XOUT is opened.		
RESET	I/O	Reset signal input or watchdog timer output/address-trap-reset output/systme-clock-reset output.		
TEST	Input	Test pin for out-going test. Betied to low.		
VDD, VSS	Power Supply	+5V, 0V(GND)		
VKK		VFT driver power supply		

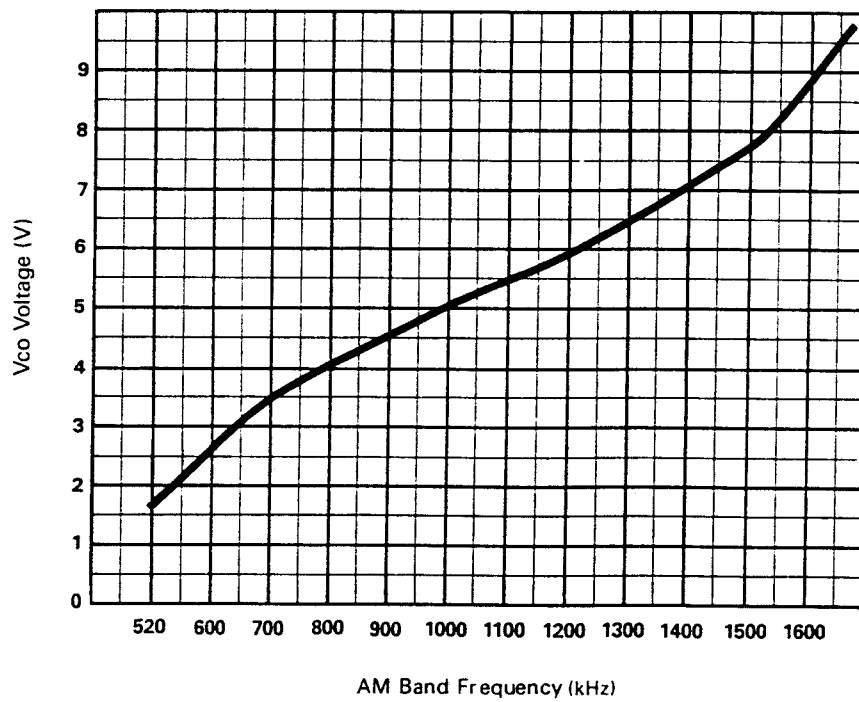
Digital Tuning System Description



Vco vs. FM Band Frequency Curve



Vco vs. AM Band Frequency Curve

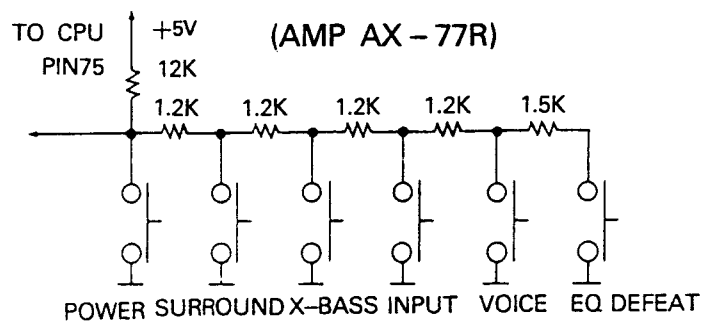
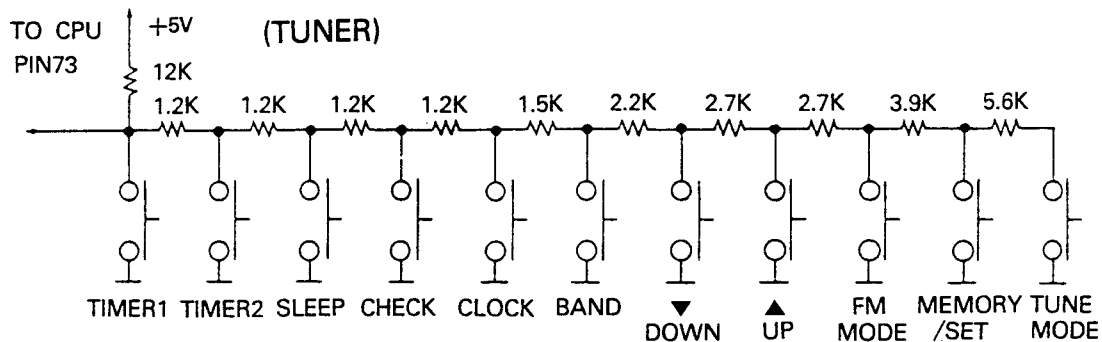


Control Key and Mode Switch Martix

Searching for STATION

Automatic Tuning

Pressing the Up or Down button for a moment causes automatic up or down searching for a station at the speed of 180ms/ch until the terminal activates (active LOW) or any button is pressed.



Port V	0.78~ 0.31	0.39~ 0.63	0.70~ 0.94	1.02~ 1.25	1.33~ 1.56	1.64~ 1.88	1.95~ 2.19	2.27~ 2.5	2.58~ 2.81	2.89~ 3.12	3.2~ 3.44
Pin73	TIMER1	TIMER2	SLEEP	CHECK	CLOCK	BAND	▼	▲	FM MODE	MEMORY/ SET	TUNE MODE
Pin74	PULL UP	PULL UP	PULL UP	PULL UP	PULL UP	PULL UP	PULL UP	PULL UP	PULL UP	PULL UP	PULL UP
Pin75	POWER	SURROUND	X-BASS	INPUT	VOICE	EQ DEFEAT					

Manual Tuning

Momentarily pressing the Up or Down button tunes to the next channel and holding down the button for more than 0.5 seconds allows the Tuner to move up or down the entire band at the speed of 180ms/ch until the key is released.

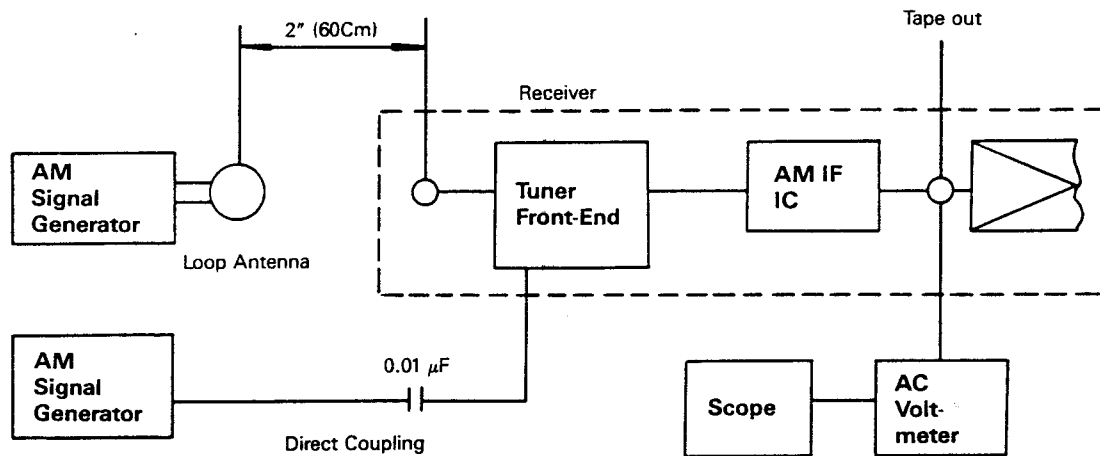
Memory Tuning

Memory

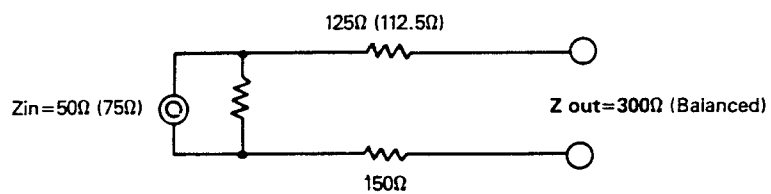
The tuning information is stored into an internal RAM by pressing the MEMORY key and then the desired memory tuning key within 5 seconds from the time the MEMORY key is initially pressed. If no key is pressed during this 5 sec. period, the MEMORY function is cancelled.

M1 to M10

Thirty AM and FM stations can be recalled from internal RAM. When it is switched from one band to the other band, the Tuner tunes to the station last tuned on that band. Each time a station is changed, the controller provides a signal to mute the tuner.



AM Alignment Connection



FM Dummy Antenna to 300 Ω Antenna terminal of receiver

FM Dummy Antenna

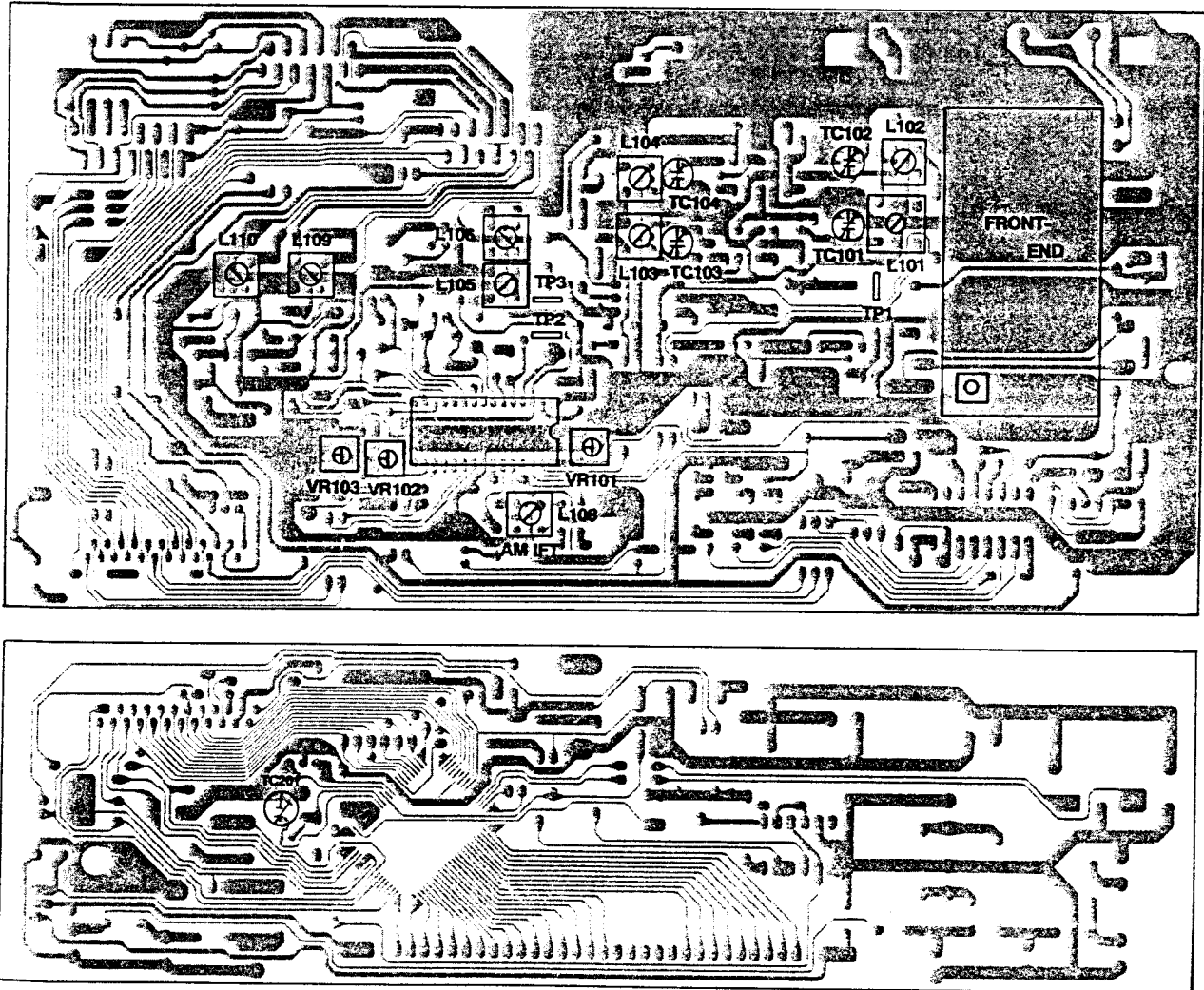
ALIGNMENT PROCEDURES

Equipment Required

- AM signal generator
- Oscilloscope
- AC voltmeter
- FM signal generator
- Stereo modulator
- Audio generator
- Distortion meter
- DC voltmeter
- Frequency counter

Note: Remove line cord antenna from FM external antenna terminal when aligning.

Alignment and Test Points



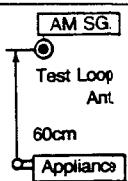
AM IF and RF Alignment

Preparation

1. Output of Signal Generator should not be higher than necessary to obtain an optimum output reading.
2. Signal Generator Modulation: 30%.
3. Switch: Press to AM.

1.AM Adjustment

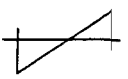
● Selector SW.....Tuner, AM

No	Subject	Feed Signal		Setting Appliance	Measure Output	Adujst Point	Adujst For	Remark
		From	To					
1.	Tuning Voltage	520kHz	1710kHz	*1) 520kHz	Connect DVM TP1	L103	DC $1 \pm 0.2V$	
		1619kHz		*2) 1710kHz		TC103	DC $8.5 \pm 0.3V$	
		● Repeat the step *1) and *2) until DVM reads the tuning voltage mentioned above. ● In case the freq. is 9kHz, the freq. of AM SG and appliance should be changed to *1) 522kHz *2) 1611kHz						
2.	IF	AM IF Genescope	ANT.	1000kHz	Connect IF Genescope	L108	Symmetrical curve on AM IF Genescope	
3.	RF Tuning	*1) AM SG 600kHz, 74dB 400Hz(30%MOD.)	ANT.	600kHz	Output Connect AC Voltmeter & Oscilloscope	T102	Maximize audio output	
		*2) AM SG 1400kHz, 74dB 400Hz(30%MOD.)	ANT.	1400kHz		TC102		
		● Feed Signal should be fed to Loop ant. through the TEST Loop ant.,60cm distant from the appliance ● Repeat the step *1) & *2)until no further improvement occurs. ● In case the freq. is 9kHz, the freq. of AM SG and appliance should be changed to *1)603kHz *2)1404kHz						
4.	Signal Meter	AM SG 1000kHz, 80dB 400Hz(30%MOD.)	ANT.	1000kHz		VR103	Tuned light on	
		● In case the frequency. step is 9kHz, the frequency of AM SG and appliance should be changed to 999kHz.						

2. LW Adjustment

● Selector SW. TUNER, MW/AM

● This adjustment is necessary to 3 band(MW/LW/FM).

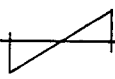
No	Subject	Feed Signal		Setting Appliance	Measure Output	Adujst Point	Adujst For	Remark
		From	To					
1.	Tuning Voltage	153kHz	279kHz	*1) 153kHz	Connect DVM to TP1	L104	DC $2 \pm 0.2V$	
				*2) 279kHz		TC104	DC $5.5 \pm 0.2V$	
				● Repeat the step *1)and *2)until DVM reads the tuning voltage mentioned above				
2.	RF Tuning	*1) AM SG 162kHz, 80dB 400Hz(30%MOD.)	ANT.	162kHz	Output Connect AC Voltmeter & Oscilloscope	L101	Maximize audio output	
		*2) AM SG 252kHz, 80dB 400Hz(30%MOD.)		252kHz		TC101		
		● Feed Signal should be fed to Loop ant. through the Test Loop ANT 60cm distant from the appliance ● Repeat the step *1)and *2)until no further improvement occurs.						

3.FM Adjustment

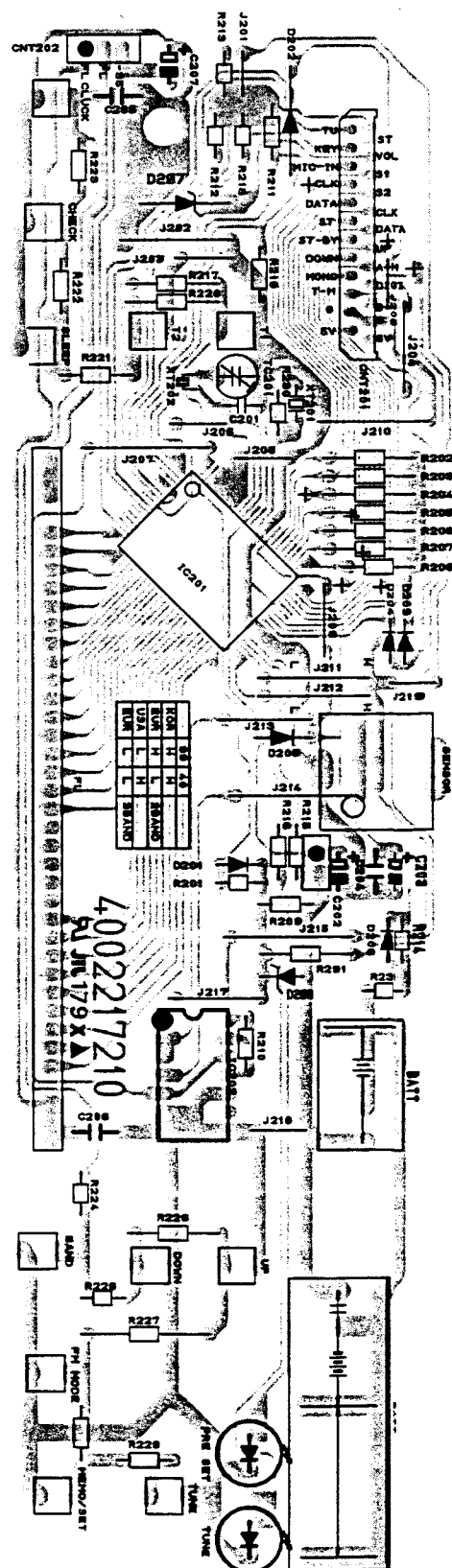
● Selector SW.....Tuner, FM(Mono / Stereo)

● Deviation.....USA / Canada(75kHz Dev.)

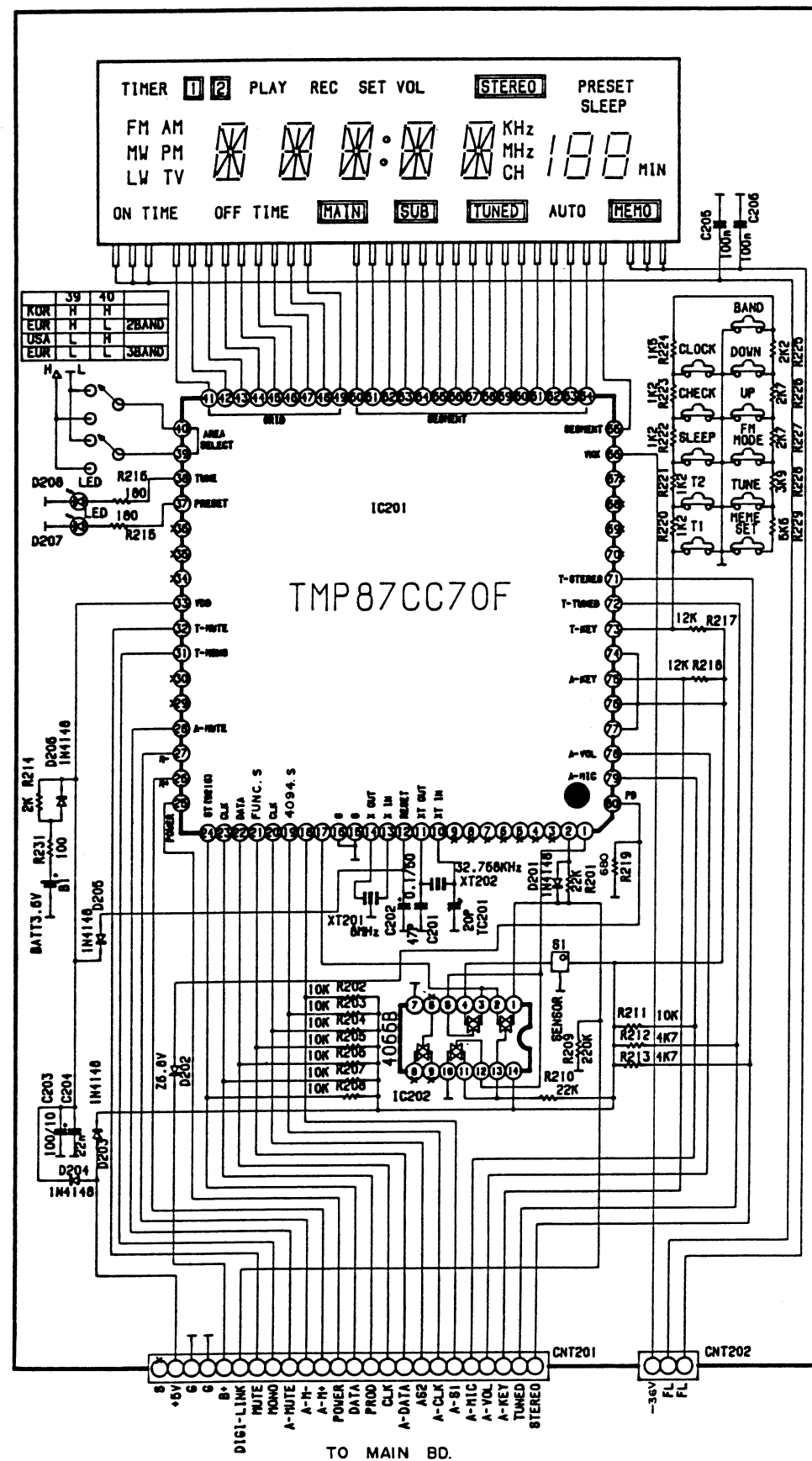
Europe(40 kHz Dev.)

No	Subject	Feed Signal		Setting Appliance	Measure Output	Adujst Point	Adujst For	Remark
		From	To					
1.	Tuning Voltage	87.5MHz	107.9MHz	87.5MHz 107.9MHz	Connect DVM TP1		DC $2.0 \pm 0.2V$ DC $8.0 \pm 0.2V$	
2.	IF	FM IF Genescope	ANT.	98MHz 60dB	Connect IF Genescope C134 ⊕		Symmetrical S curve on FM IF Genescope	
3.	THD (Mono)	FM SG 98.1MHz, 60dB 1kHz (75kHz dev.)	ANT.	98.1MHz Mono	*1)Output Connect DVM	L105	DC $0 \pm 0.05V$	
					*2)Output Connect AC Voltmeter & Distortion Analyzer	L106	Minimize distortion	
					● Adjust the step *1) 1st and the step *2) next and repeat until to further improvement occurs.			
4.	THD (Stereo)	FM SSG 98.1MHz, 60dB 1kHz (75kHz Dev.) Pilot 19kHz (9% Mod.)	ANT.	98.1MHz Stereo	Output connect AC voltmetr & distortion	Front- End	Minimize distortion	
5.	Mute level	FM SG 98.1MHz, 15 μV 1kHz (75kHz Dev.)	ANT.	98.1MHz Mono	Output connect oscilloscope	VR101	Tuned on	
6.	Separat- ion	*1) FM SSG 98.1MHz, 60dB 1kHz(75kHz, Dev) Pilot 19kHz (10% Mod) (L ch.Mode)	ANT.	98.1MHz Stereo	R ch Mod connect AC voltmeter & distortion analyzer and oscilloscope	VR102	Minimize output	L ch Mode
		*2) Same as above (R ch.Mode)			L ch Mod connect same as above			R ch Mode
		● Repeat the step *1)until no further improvement occurs.						

P.C.B(TOP VIEW)

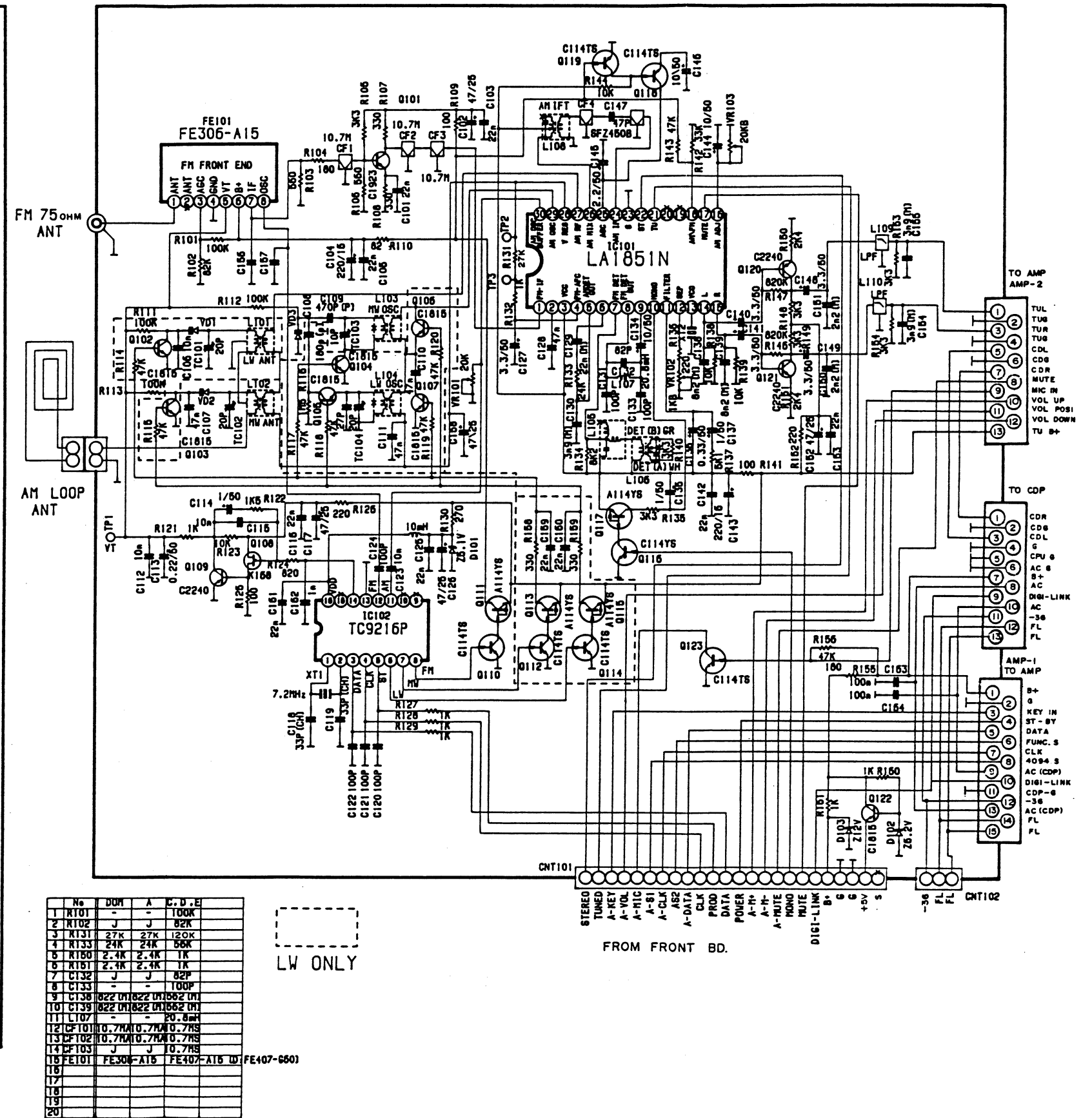


NOTES



SCHEMATIC DIAGRAM

Model No.:TX - 77R



No	Q	VAL	A	C.D.E
1	R101	100K	100K	100K
2	R102	100K	100K	100K
3	R103	100K	100K	100K
4	R104	100K	100K	100K
5	R105	100K	100K	100K
6	R106	100K	100K	100K
7	R107	100K	100K	100K
8	R108	100K	100K	100K
9	R109	100K	100K	100K
10	R110	100K	100K	100K
11	R111	100K	100K	100K
12	R112	100K	100K	100K
13	R113	100K	100K	100K
14	R114	100K	100K	100K
15	R115	100K	100K	100K
16	R116	100K	100K	100K
17	R117	100K	100K	100K
18	R118	100K	100K	100K
19	R119	100K	100K	100K
20	R120	100K	100K	100K

LW ONLY

ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE: Components marked with a $\triangle$ have special characteristics important to safety. If you replace any of these components, read carefully the product safety notice in this manual. Don't degrade the safety of the product through improper servicing. Resistor/Capacitor Tolerance, D:($\pm 0.5\%$), J:($\pm 5\%$), K:(10%), M:($\pm 20\%$), Z:(+80, -20%).

Ref. No.	Description	Mfr. Part No.	Remark
	PCB ASSEMBLY-MAIN	05407717201	
Capacitors			
C101	Ceramic Tubular 0.022 μ F 25V Z	3519223520	
C102	Electric SG 220 μ F 25V M	3479322141	
C103	Ceramic Tubular 0.022 μ F 25V Z	3519223520	
C104	Electric SG 47 μ F 25V M	3479347041	
C105	Ceramic Tubular 0.022 μ F 25V Z	3519223520	
C106	Ceramic Disc 0.047 μ F 50V Z	3579473530	
C107	Ceramic Disc 0.01 μ F 50V Z	3579103530	LW
C108	Poly 180 pF 50V J	3619181110	LW
C109	Poly 470 μ F 50V J	3619471110	
C110	Ceramic Disc 0.047 μ F 50V Z	3579473530	LW
C111	Ceramic Disc 0.047 μ F 50V Z	3579473530	
C112	Ceramic Tubular 0.01 μ F 16V Z	3517103915	
C113	Electric SA 0.22 μ F 50V M	3479222871	
C114	Electric SA 1 μ F 50V M	3479210971	
C115	Ceramic Tubular 0.01 μ F 16V Z	3519103915	
C116	Ceramic Tubular 0.022 μ F 25V Z	3519223520	
C117	Electric SG 47 μ F 25V M	3479347041	
C118/119	Ceramic CH 33 pF 50V J	3528330210	
C120	Ceramic Tubular 100 pF 50V K	3519101935	
C121/122	Not used	.	
C123	Ceramic Tubular 0.01 μ F 16V Z	3519103915	
C124	Ceramic Tubular 100 pF 50V K	3519101935	
C125	Not used	.	
C126	Electric SG 47 μ F 25V M	3479347041	
C127	Electric SA 3.3 μ F 50V M	3479233971	
C128	Ceramic Disc 0.047 μ F 50V Z	3479473530	
C129	Mylar 0.022 μ F 100V J	3679223120	
C130	Not used	.	
C131	Ceramic Tubular 100 pF 50V K	3519101935	
C132	Ceramic Tubular 82 pF 50V K	3519820935	D(FTZ)
C132	Jumper	.	Dom.A,C,E,F
C133	Ceramic Tubular 100 pF 50V K	3519101935	D(FTZ)
C134	Electric SA 10 μ F 0V M	3479210071	
C135	Electric SA 1 μ F 50V M	3479210971	
C136	Electric SA 0.33 μ F 0V M	3479233871	
C137	Electric SA 1 μ F 0V M	3479210971	
C138/139	Mylar 0.0082 μ F 00V J	3679822120	Dom,A
C138/139	Mylar 0.0056 μ F 00V J	3679562120	C,D,E,F
C140/141	Electric SA 2.2 μ F 50V M	3479222971	
C142	Ceramic Tubular 0.022 μ F 25V Z	3519223520	

*Mylar is a registered trademark of E.I.Dn Pont de Nemeurs and Company.

Ref. No.	Description	Mfr. Part No.	Remark
C143	Electric SG 220 μ F 25V M	3479322141	
C144	Electric SA 10 μ F 50V M	3479210071	
C145	Electric SA 1 μ F 50V M	3479210971	
C146	Electric SA 10 μ F 50V M	3479210071	
C147	Ceramic Tubular 47 pF 50V J	3519470935	
C148/149	Electric SA 2.2 μ F 50V M	3479222971	
C150/151	Not used	.	
C152	Electric SG 47 μ F 50V M	3479347041	
C153	Ceramic Tubular 0.022 μ F 25V Z	3519223520	
C154/155	Mylar 0.0039 μ F 100V J	3679392120	
C156/157	Not used	.	
C158	Electric SG 47 μ F 50V M	3479347041	
C159-161	Ceramic Tubular 0.022 μ F 25V Z	3519223520	
C162	Ceramic Tubular 0.001 μ F 50V K	3519102935	
C163	Not used	.	
C164-167	Ceramic Tubular 0.1 μ F 50V K	3519104935	
C168	Electric SG 220 μ F 25V M	3479322141	
Trimmer Capacitors			
TC101	Trimmer 20P, TZ03R220F	3838001010	LW
TC102/103	Trimmer 20P, TZ03R220F	3838001010	
TC104	Trimmer 20P, TZ03R220F	3838001010	LW
Ceramic Filters			
CF101/102	Ceramic Filter 10.7MHz MA8K-A	3908011001	Dom,A
CF101/102	Ceramic Filter 10.7MHz MS3GH	3908011011	C,D,E,F
CF103	Jumper	.	Dom,A
CF103	Ceramic Filter 10.7MHz MS3GH	3908011011	C,D,E,F
CF104	Ceramic Filter SFZ 450F	3908001380	
Coils			
L101	LW ANT Coil, Can type, 7mm	2608201130	LW
L102	MW ANT Coil, Can type, 7mm	2608201120	
L103	LW OSC Coil, Can type, 7mm	2638401160	LW
L104	MW OSC Coil, Can type, 7mm	2638201150	
L105	FM DET Green, Can type, 7mm	2628000060	
L106	FM DET White, Can type, 7mm	2628000070	
L107	20.8mH	2648601430	D(FTZ)
L108	AM IFT, Can type, 7mm	2848001250	
L109/110	Inductor 1mH	2648610284	
L111	Jumper	.	

Ref. No.	Description	Mfr. Part No.	Remark
Connectors			
CNT101	Plug 24P Card Cable	4428526365	
CNT102	Plug 3P	4428505710	
To AMP 1	Wire Trap 15P	4428525360	
To AMP 2	Wire Trap 13P	4428525340	
From CDP	Wafer 13P	4428513920	
•	System Wire Trap 15P	4358615503	
•	System Wire Trap 13P	4358613501	
Diodes			
D101	Zener 5.1VB	2258599103	
D102	Zener 6.2VB	2258599104	
D103	Zener 12.0VC	2258599166	
Front-end			
FE101	FM Front-end FE306-A15	3928801930	Dom, A
FE101	FM Front-end FE407-A15	3928801970	C, E, F
FE101	FM Front-end FE407-G60	3928801900	D
ICs			
IC101	LA1851N IF, MPX	2168417114	
IC102	TC9216P, PLL	2168007205	
Resistors : All resistors are 1/5W carbon film $\pm 5\%$ tolerance, unless otherwise specified. M.O is Metal Oxide type. C is Cement type. M is Metal film type.			
R101	100k ohm	3069104970	C, D, E, F
R102	Jumper	•	Dom, A
R102	82k ohm	3069823970	C, D, E, F
R103	Not used	•	
R104	560 ohm	3069561970	Dom, A
R104	Jumper	•	C, D, E, F
R105	3.3k ohm	3069332970	Dom, A
R105	2.2k ohm	3069222970	C, D, E, F
R106	100 ohm	3069331970	
R107-108	330 ohm	3069331970	
R109	100 ohm	3069101970	
R110	82 ohm	3069820970	
R111	100k ohm	3069104970	LW
R112-113	100k ohm	3069104970	
R114-117	47k ohm	3069473970	LW
R118	1.5M ohm	3069155970	LW

Ref. No.	Description	Mfr. Part No.	Remark
R119-120	47k ohm	3069473970	LW
R121	1k ohm	3069102970	
R122	15k ohm	3069152970	
R123	10k ohm	3069103970	
R124	820 ohm	3069821970	
R125	100 ohm	3069101970	
R126	270 ohm	3069271970	
R127-129	1k ohm	3069102970	
R130	220 ohm	3069220970	
R131	33k ohm	3069333970	Dom, A
R131	100k ohm	3069104970	C, D, E, F
R132	1k ohm	3069102970	
R133	24k ohm	3069243970	Dom, A
R133	47k ohm	3069473970	C, D, E, F
R134	Not used	.	
R135	3.3k ohm	3069332970	
R136	220 ohm	3069220970	
R137	5.6k ohm	3069562970	
R138/139	10k ohm	3069103970	
R140	3.3k ohm	3069332970	
R141	100 ohm	3069101970	
R142	47k ohm	3069473970	
R143	33k ohm	3069333970	
R144	10k ohm	3069103970	
R145/146	820k ohm	3069824970	
R148/149	3.3k ohm	3069332970	
R150/151	2.4k ohm	3069242970	Dom, A
R150/151	1.2k ohm	3069122970	C, D, E, F
R152	220 ohm	3069221970	
R153/154	3.3k ohm	3069332970	
R155	180 ohm	3069181970	
R156	47k ohm	3069473970	
R158/159	330 ohm	3069331970	LW
R160/161	1k ohm	3069102970	
Variable Resistors - Semifixed			
VR101	20k ohm (B), FM Tuner Level ADJ	3248020343	
VR102	2k ohm (B), Seperation ADJ	3248020243	
VR103	20k ohm (B), AM Tuner Level ADJ	3248020343	
Transistors			
Q101	KTC1923Y, IF Amplifier, Silicon, NPN	2208406108	
Q102-107	KTC1815Y, LW Switching, Silicon, NPN	2208606104	
Q108	2SK168D, PLL-LPF, Silicon, FET	2208211100	
Q109	KTC2240BL, PLL-LPF, Silicon, NPN	2208606108	

Ref. No.	Description	Mfr. Part No.	Remark
Q110	KTC114TS, General Switching, Silicon, NPN	2208622108	
Q111	KTA114YS, General Switching, Silicon, PNP	2208622105	
Q112	KTC114TS, LW Switching, Silicon, NPN	2208622108	
Q113	KTA114YS, LW Switching, Silicon, PNP	2208622105	
Q114	KTC114TS, LW Switching, Silicon, NPN	2208622108	
Q115	KTA114YS, LW Switching, Silicon, PNP	2208622105	
Q116	KTC114TS, LW Switching, Silicon, NPN	2208622108	
Q117	KTA114YS, LW Switching, Silicon, PNP	2208622105	
Q118/1	KTC114TS, LW Switching, Silicon, NPN	2208622108	
Q120/1	KTC2240BL, AF - Amplifier, Silicon, NPN	2208606108	

Others

•	Ground Plate, One size	4235007210	
•	AM Loop ANT	2608207360	
XT101	X-TAL 7.2MHz	3908101031	
XT102	Resonator CSB456F	3938131600	
•	PCB - Main	4002217200	

	PCB ASSEMBLY - FRONT	05407717210	
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Capacitors

C201	Ceramic CH	47 pF 50V J	3528470210	
C202	Electric SA	0.1 μ F 50V M	3479210871	
C203	Electric SG	100 μ F 10V M	3479310121	
C204	Ceramic	0.022 μ F 25V Z	3519223530	
C205/206	Ceramic	0.1 μ F 50V K	3519104935	
C207	Electric SG	47 μ F 50V M	3479347071	

Trimmer Capacitor

TC201	Trimmer 20P	3838001170	
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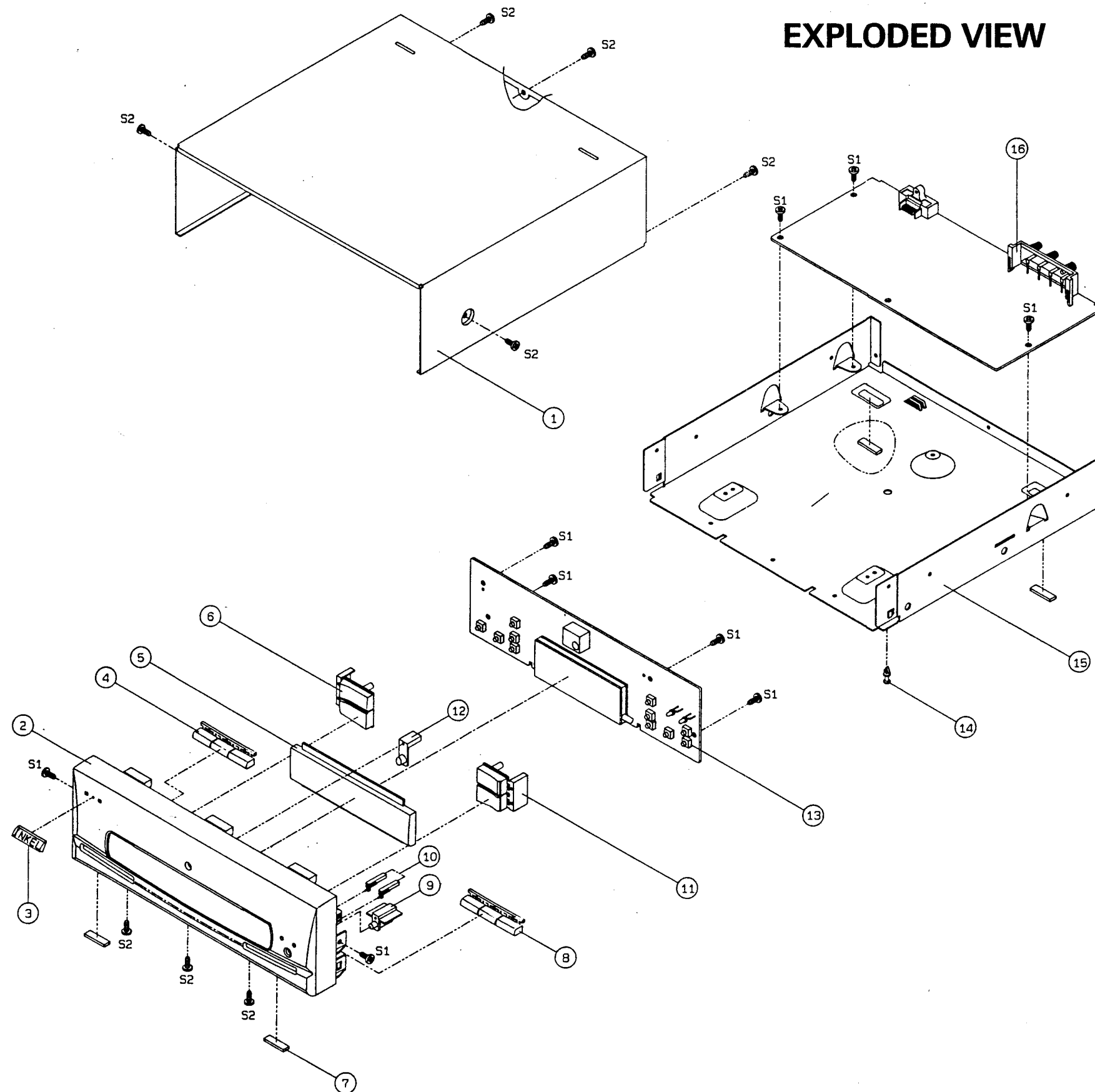
Connectors

CNT201	Wafer 24P	4428526365	
CNT202	Assembly 3P 260mm to Main Board	4119103263	
•	Card Cable 24P 170mm to Main Board	4118624170	

Diodes

D201	1N4148M, Switching	2058322101	
D202	Zener, 6.8VC	2258599121	
D203-206	1N4148M, Switching	2058322101	
LED1/LED2	SLR 34URC-70F 124, Red	2371124701	

Ref. No.	Description	Mfr. Part No.	Remark
ICs			
IC201 IC202	TMP-87CH70F, CPU GD4066, Switching	2138307148 2138001101	
Resistors			
R201	22k ohm	3069223970	
R202-208	10k ohm	3069103970	
R209	220k ohm	3069224970	
R210	22k ohm	3069223970	
R211	47k ohm	3069473970	
R212/213	4.7k ohm	3069472970	
R214	2k ohm	3069202970	
R215/216	180 ohm	3069181970	
R217/218	12k ohm	3069123970	
R219	470 ohm	3069471970	
R220-223	1.2k ohm	3069122970	
R224	1.5k ohm	3069152970	
R225	2.2k ohm	3069222970	
R226/227	2.7k ohm	3069272970	
R228	3.9k ohm	3069392970	
R229	5.6k ohm	3069562970	
R230	1 M ohm	3069105970	
R231	100 ohm	3069101970	
Others			
XT201	Resonator 8MHz	3938131590	
XT202	X-TAL 32.768kHz	3908101060	
F1	FIP 10BXM8 FL	2328130928	
S1	Sensor	2408000132	
BATT	Battery 3.6V 30mA	5518001680	
•	PCB - Front	4002217210	



EXPLODED VIEW

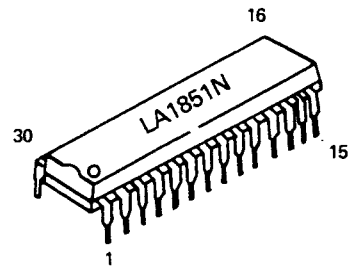
Model No.:TX - 77R

MECHANICAL PARTS LIST

Ref. No.	Description	Q'ty	Mfr. Part No.	Remark
1	Cover Top, Secc 0.8t. Black	1	046122025111	
2	Panel Front, ABS. Black HI-153	1	048501026111	Dom
2	Panel Front, ABS. Black HI-153	1	048501026112	A,B,C,D,E,F
3	Badge, MP211. Gold	1	048535038311	Dom
3	Badge, MP211. Gold	1	048535038411	A,B,C,D,E,F
4	Button 3Key (L), ABS. Black HI-153	1	045845109111	Dom
4	Button 3Key (L), ABS. Black HI-153	1	045845109113	A,B,C,D,E,F
5	Window Display, Acryl. Wine	1	8553016810	
6	Button 2Key (L), ABS. Black HI-153	1	048543047111	Dom
6	Button 2Key (L), ABS. Black HI-153	1	048543047113	A,B,C,D,E,F
7	Foot Cushion, Bumpon. Black	4	6715021220	
8	Button 3Key (R), ABS. Black HI-153	1	048545109011	Dom
8	Button 3Key (R), ABS. Black HI-153	1	048545109012	A,B,C,D,E,F
9	Button 1Key, ABS. Black HI-153	1	8545108710	
10	Indicator LED	2	8555047810	
11	Button 2Key (R), ABS. Black HI-153	1	048543047011	
12	Sensor Eye, L121-21051. Wine	1	8555047910	
13	Switch Tact	11	4658003710	
14	Fastener	1	6528301910	
15	Chassis Main	1	6122635110	
16	Terminal Antenna	1	4408101510	
17	Chassis Back, Secc 0.8t. Black	1	046102034611	Dom
17	Chassis Back, Secc 0.8t. Black	1	046102034621	A
17	Chassis Back, Secc 0.8t. Black	1	046102034631	B
17	Chassis Back, Secc 0.8t. Black	1	046102034641	C
17	Chassis Back, Secc 0.8t. Black	1	046102034651	D
17	Chassis Back, Secc 0.8t. Black	1	046102034661	E
17	Chassis Back, Secc 0.8t. Black	1	046102034671	F
18	Stopper Connector	1	6518002210	
Hardware Kit				
Internals				
S1	Screw #2 BTC 3x8 ZNY	9	8109230081	
Externals				
S2	Screw #2 BTC 3x8 ZNB	12	8109230083	

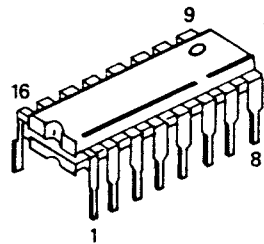
SEMICONDUCTOR LEAD IDENTIFICATION
& INTERNAL DIAGRAM

LA1851 : IC101



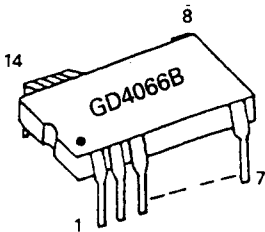
Pin No.	Function
1	FM IF 입력
2	FM IF BIAS
3	VCC
4	FM AFC 출력
5	AM DET OUT
6	AM DET OUT
7	FM DET
8	FM DET OUT
9	FM DET OUT
10	VCO STOP
11	PLL LOOP FILTER
12	ST SEPARATION
13	MPX VCO
14	MPX L-CH 출력
15	MPX R-CH 출력
16	AM-SD ADJ.
17	MUTE
18	AM/FM
19	N.C
20	N.C
21	AM/FM TU
22	MPX ST
23	GND
24	AM IF
25	AGC
26	AM MIC
27	AM RF
28	VREG
29	AM OSC
30	FM-SD ADJ.

TC9218P : IC102



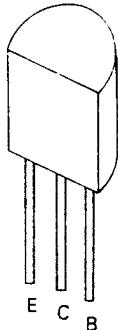
Pin No.	Function
1	X-TAL
2	X-TAL
3	DATA
4	CLOCK
5	ST
6	N.C
7	N.C
8	FM
9	N.C
10	N.C
11	AM IN
12	FM IN
13	GND
14	D01
15	D02
16	VDD

GD4066B : IC202

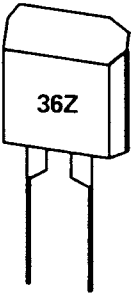


Pin No.	Function
1	DIGI-LINK
2	RMC IN
3	VCC
4	N.C
5	P/D
6	N.C
7	GND
8	N.C
9	N.C
10	SENSOR
11	RMC IN
12	P/D
13	VCC
14	VCC

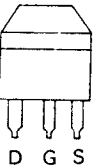
KTC 2240BL : Q109, Q120, Q121
KTC 1923 : Q101
KTC 1815 : Q122
Q102-Q107



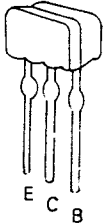
KV1236 : VD1, VD2, VD3



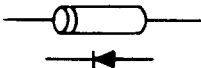
2SK168 : Q108



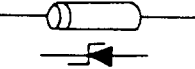
DTC114TS : Q110, Q112, Q114, Q116, Q118
DTA114YS : Q111, Q113, Q115, Q117



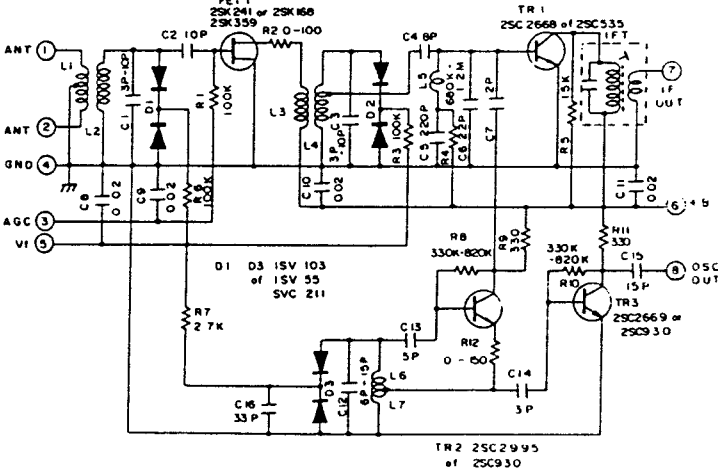
1N4148 : D201, D203-D206



DZ5,6B : D101
DZ6,8B : D102
DZ12C : D103



FE306 - A15 : FM FRONT - END



SEMICONDUCTOR VOLTAGE CHART

Ref. No		FM 98.1MHz	AM 999KHz
IC 101	1/2	2.2V	2.4V
	3	9.7V	9.5V
	4	1.8V	2.3V
	5	0V	0.6V
	6	2.2V	2.2V
	7	9.7V	9.5V
	8	3.6V	2.4V
	9	2.2V	2.2V
	10	9.1V	8.9V
	11	8.3V	8.1
	12	0.2V	0.2V
	13	7.6V	7.4V
	14	4.8V	4.7V
	15	4.9V	4.8V
	16	1.6V	1.5
	17	0V	0V
	18	4.1V	0.5V
	19	0.2V	0.2V
	20	0.8V	4.8V
	21	4.9V	4.9V
	22	4.6V	4.6V
	23	0V	0V
	24	2.2V	2.4V
	25	0.3V	0.7V
	26	9.7V	9.5V
	27-29	2.4V	2.3V
	30	1.0V	0.8V
Ref.No.		FM	AM(MW/LW)
IC102	1	2.5V	2.5V
	2	2.6V	2.6V
	3-5	4.9V	4.9V
	6	0V	0V/5.2V
	7	0V	5.2V/0V
	8	5.2V	0V
	9/10	0V	0V
	11	0V	2.6V
	12	2.6V	0V
	13	0V	0V
	14	0.6V	0.6V
	15	0V	0V
	16	5.3V	5.3V
Ref.No.		FM	
IC201	1	4.8V	
	2-9	0V	
	10	1.6V	

Ref. No		FM	
IC 201	11	2.3V	
	12	4.7V	
	13	2.2V	
	14	2.2V	
	15/16	0V	
	17	0V	
	18-20	0V	
	21-25	4.9V	
	26-28	0V	
	29-31	0V	
	32/33	4.8V	
	34-36	0V	
	37	-35V	
	38	4.2V	
	#39/40	#	
	41-65	0.5- -35V	
	66	-36V	
	67-70	0V	
	71	4.8V	
	72-77	4.8V	
	78	0V	
	79	4.8V	
	80	5.0V	
Ref.No.		#39	#40
IC 201	5V	5V	KOR
	5V	5V	EUR(2BAND)
	0V	5V	USA
	0V	0V	EUR(3BAND)
Ref. No.		FM	AM
IC202	1	0V	0V
	2	4.8V	4.8V
	3/4	0V	0V
	5	4.8V	4.8V
	6-9	0V	0V
	10-12	4.8V	4.8V
	13	0V	0V
	14	4.9V	4.9V
Ref. No.		FM(98.1MHz)	AM 999KHz
Q101	E	1.0V	0V
	B	11.8V	0V
	C	1.7V	0V
Ref. No.		MW	LW
Q103	E	0.6V	0V
Q105	B	0.6V	0V
Q106	C	0.6V	0V

Ref. No		FM 98.1MHz	AM 999KHz
Q 101	E	0V	0V
	C	11.8V	0V
	B	1.7V	0V
Ref. No		MW	LW
Q 103	E	0.6V	0V
Q 105	C	0.6V	0V
Q 106	B	0.6V	0V
Q 102	E	0V	0.6V
Q 104	C	0V	0.6V
Q 107	B	0V	0.6V
Ref. No.		FM 98.1MHz	AM 999KHz
Q 108	D	10.5V	10.5V
	S	0.6V	0.6V
	G	0.5V	0.5V
Q 109	E	0.9V	0.9V
	C	10.5V	10.5V
	B	1.7V	1.7V
Ref. No.		FM	AM MW/LW
Q 110	E	0V	0V
	C	0V	12.5V
	B	5.2V	0V
Q 111	E	12.5V	12.5V
	C	12.5V	0V
	B	0V	12.5V
Q 112	E	0V	0V
	C	12.5V	0V
	B	0V	5.2V
Ref. No.		FM LW	MW
Q 113	E	12.5V	12.5V
	B	0V	12.5V
	C	12.5V	0V
Q 114	E	0V	0V
	C	12.5V	0V
	B	0V	5.2V
Q 115	E	12.5V	12.5V
	C	0V	12.5V
	B	12.5V	0V
Ref. No.		MONO	STEREO
Q 116	E	0V	0V
	C	0V	9.5V
	B	4.8V	0V
Q 117	E	9.5V	9.5V
	C	9.5V	8V
	B	0V	9.3V

Ref. No		FM	AM
Q 118	E	0V	0V
	C	2V	0V
	B	0V	0.9V
Q 119	E	0V	0V
	C	0V	6.9V
	B	12.4V	0V
Q 120	E	3.3V	3.3V
Q 121	C	6.8V	6.8V
	B	3.8V	3.8V
Ref. No.		AM	FM
Q 121	E	5.6V	5.6V
	C	21.7V	21.7V
	B	6.2V	6.2V

DECK DD-77R SPECIFICATIONS

Track Configuration

The 4-track, 2-channel and rotary reverse heads & Stereo Cassette Deck motors.

1-Electronic Governor

1-High Torque DC Motor(Reel)

Mechanism

1-Motor, 1-Solenoid Mechanism

Heads

Rec / Playback Head Hard Permalloy

Erase Head Double Gap Ferrite

Tape Speed 1 and 7 / 8 IPS(4.76cm / sec) $\pm 1.0 / \pm 1.0\%$

(FWD/REV)

Wow Flutter No More than 0.15% (Jis)
0.25%(DIN)

Signal to Noise Ratio(W.CCIR / ARM)

CrO2 Tape with Dolby B / C NR More than 60/70dB

CrO2 Tape without Dolby NR More than 50dB

Frequency Response(- 20dB REC Dolby NR off)

Normal Tape 60Hz-16.00kHz, ± 3 dB

CrO2 Tape 60Hz-16.00kHz, ± 3 dB

Metal Tape 60Hz-16.00kHz, ± 3 dB

THD(1kHz, 0dB Rec) No More than 1.0%

Channel Separation No More than 35dB

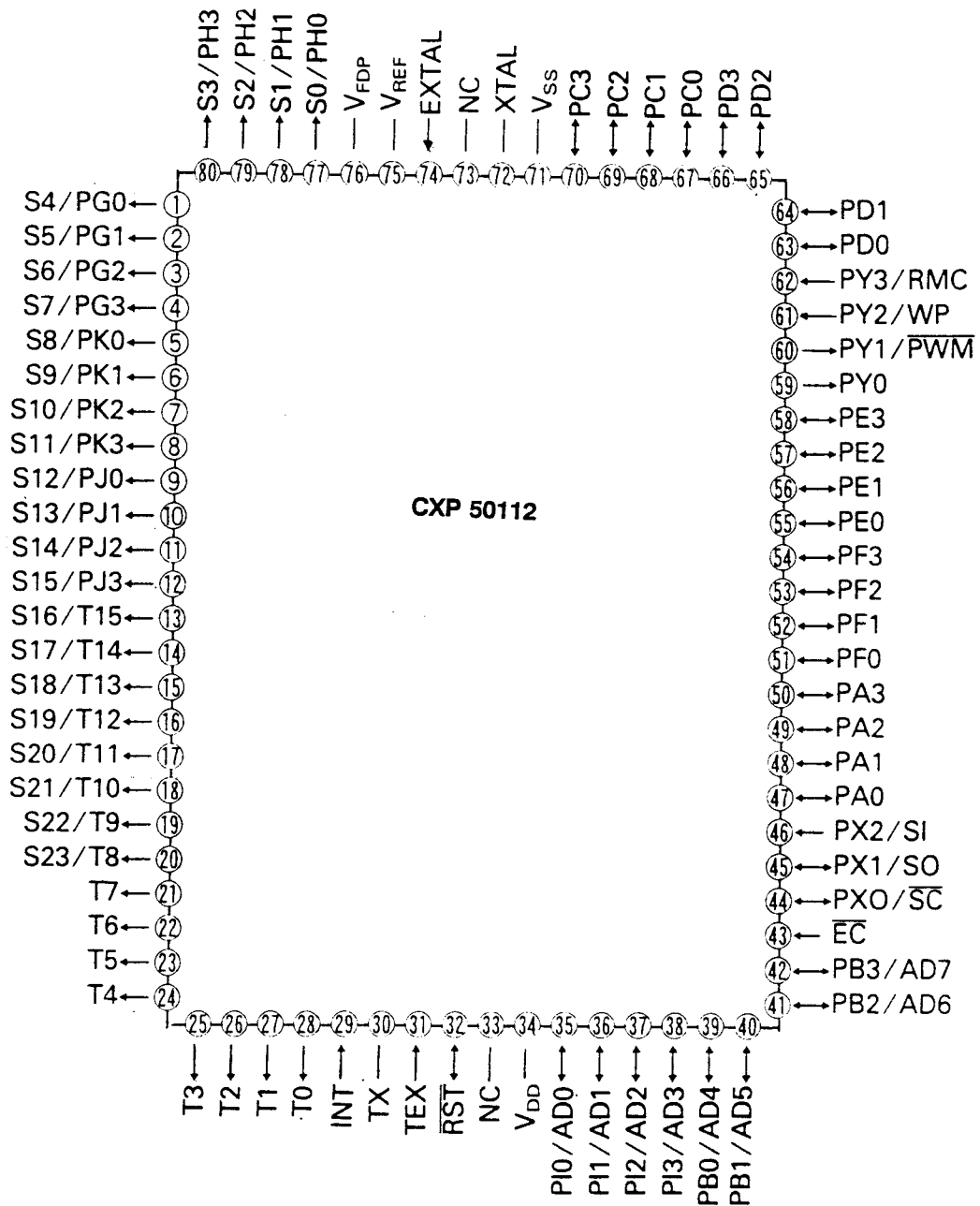
Dimensions 235(W)X120(H)X240(D)mm

Weight 3kg(6.6lb)

Note : Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the European standard, and provides information on regional circuit modification through use of alternate schematic diagram, and information on regional component variations through use of parts list. Design and specifications subject to change without notice for improvement.

CIRCUIT DESCRIPTION

IC201 CXP50112



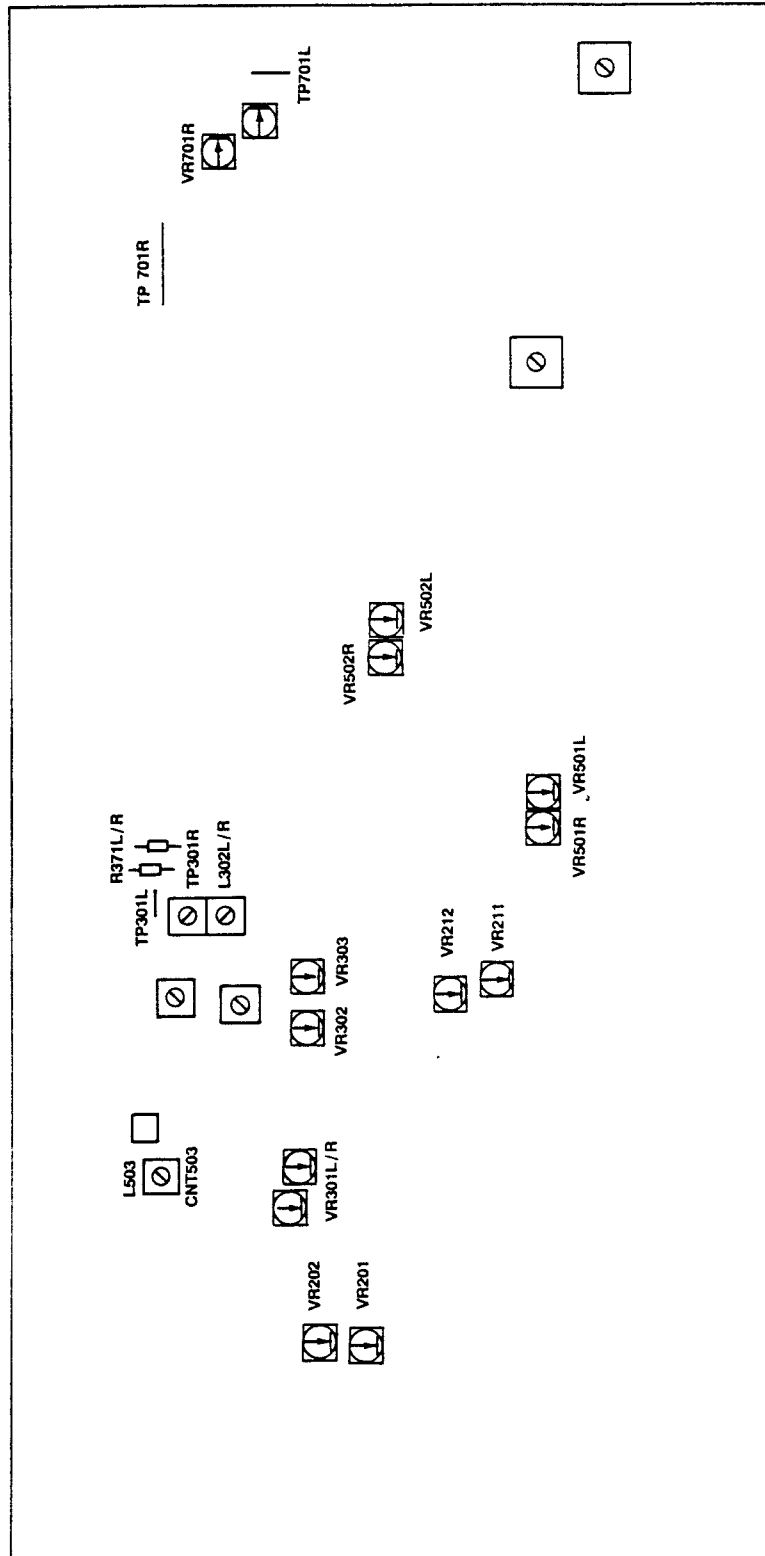
Input and Output Terminal Functions

Pin No.	I/O	Description
P34(V _{DD})	Input	Positive power supply pin.
P71(V _{SS})	Input	GND pin.
P74(EXTAL)	Input	Clock generator circuit input pin. A crystal oscillator or ceramic resonator is to be connected between the EXTAL and XTAL pins. When using an external clock input, connect a clock generation source to the EXTAL pin and leave the XTAL pin open.
P72(XTAL)	Output	Clock generator circuit output.
P32($\overline{\text{RST}}$)	Input/ Output	This is the output of the built-in power-ON-reset circuit. When an external reset signal is to be received, this pin must be maintained at a Low-level(0V) for a period of at least 2 instruction cycles.
P29 (INT)	Input	Interrupt input pin. Either the edge or level mode is selected according to the program.
P43 ($\overline{\text{EC}}$)	Input	Event counter input pin.
P46 (SI/PX2)	Input	Performs both the serial interface (8-bit) input pin and port X bit 2 (input) functions.
P45 (SO/PX1)	Input/ Output	Performs both the serial interface (8-bit) output pin and port X bit 1 (input) functions.
P44(SC/PX0)	Input/ Output	Performs both the serial interface clock I/O pin and Port X bit 0 (input) functions.
P62(RMC/PY3)	Input	Performs both the remote control input pin and port Y bit 3(input) functions.
P61(WP/PY2)	Input	Performs both the standby state clearing wake-up input and the port Y bit 2(input) functions.
P60(PWM/PY1)	Output	Performs both the PWM generator(14-bit) output and port Y bit 1 (Output) functions.
P59(PY0)	Output	Port Y bit 0 output pin.
P47~P50 (PA0~PA3)	Input/ Output	4-bit I/O port. Each bit can be programmed to be either an input or output. The tristate output configuration is employed.
P39~P42 (PB0/AD4~ PB3/AD7)	Input/ output	4-bit I/O port which performs the same functions as port A and doubles as the A/D converter input pin.
P67~P70 (PC0~PC3)	Input/ output	4-bit I/O port. Each bit can be programmed to be either an input or output. The tristate output configuration is employed.
P63~P66 (PD0~PD3)	Input/ output	4-bit I/O port which performs the same functions as port C.
P55~P58 (PE0~PE3)	Input/ output	4-bit I/O port which performs the same functions as port C.

Pin No.	I/O	Description
P51~P54 (PF0~PF3)	Input/ output	4-bit I/O port which performs the same functions as port C.
P35~P38 (PI0/AD0~ PI3/AD3)	Input/ output	4-bit I/O port which performs the same functions as port C and doubles as the A/D converter input pin.
P76(V _{FDP})	Input	Load power supply pin which is required when the FDP (fluorescent display tube) output driver incorporates a load resistor.
P21~P28 (T0~T7)	Output	Output pin for the 8 low-order bits of the FDP timing signal.
P13~P20 (T8/S23~ T15/S16)	Output	Output pin for both the segment signal and the 8 high-order bits of the FDP timing signal.
P1~P4 (PG0/S4~ PG3/S7)	Output	Performs both the 4-bit output port and the FDP segment signal output pin functions.
P77~P80 (PH0/S0~ PH3/S3)	Output	Same as port G.
P9~P12 (PJ0/S12~ PJ3/S15)	Output	Same as port G.
P5~P8 (PK0/S8~ PK3/S11)	Output	Same as port G.
P31(TEX)	Input	32 kHz timer clock generator circuit input pin. A 32.768kHz crystal oscillator is to be connected between the TEX and TX pins. When using this pin as the event clock input pin, connect a clock generation source to the TEX pin and leave the TX pin open.
P30(TX)	Output	Clock generator circuit output.
P75(V _{REF})	Input	Reference voltage input for the supply voltage reset circuit. A zener diode should normally be connected to this pin.

ALIGNMENT PROCEDURES

Alignment and Test Points (P.C.B Main & Dolby)



Before Measurements and Adjustment

The following general conditions apply to the electrical measurements and adjustments unless especially stated otherwise.

— Dolby NR switch off.

Test tape

- TCC - 155 ——— Azimuth(14kHz, - 24dB)
- TCC - 122 ——— Tape speed(3kHz, - 10dB)
- TCC - 130 ——— Playback level (Dolby NR ref. tape 400Hz, 0dB)
- TCC - 185C ——— Playback frequency response

— Reference Tape

- Normal ——— TDK AC - 224
- CrO₂ ——— TDK AC - 513
- Metal ——— TDK AC - 712

2. Instrument required

- Audio frequency oscillator
- ACVM or dual channel, mV - meter
- Wow / Flutter meter
- Oscilloscope

Playback section

Adjustments	Test tape	Mode	Apply signal to	Measure on	Read on	Adjust with	Adjust to
Head Azimuth	TCC - 155 14kHz (A.BEX)	FWD Play (A & B Deck)		DOLBY TP	ACmV - meter Oscilloscope	Adjusting a left screw of head	Max ● Lissajous' figure become a straight line with an angle 45 degrees
		REV play (A Deck)				Adjusting a right screw of head	
Playback Speed at normal	TCC - 112 3kHz — 10dB(A.BEX)	Play (A & B Deck)			Wow and Flutter Meter	A Deck VR201 & B Deck VR211	3000Hz ± 15Hz
Playback Speed at Hi - speed	TCC - 112 3kHz — 10dB(A.BEX)					A Deck VR202 & B Deck VR212	4500Hz ± 30Hz
Playback Level	TCC - 130 400Hz 0dB (A.BEX)				ACmV - meter	A Deck VR502 L/R	TP 701 L/R
Playback frequency responce	TCC-185C 12.5kHz,1kHz, 60Hz(A.BEX)					B Deck VR501 L/R	
						ACmV- —meter	

Recording section

Adjustments	Test tape	Mode	Apply signal to	Measure on	Read on	Adjust with	Adjust to
Bias OSC Frequency	AC - 712 (TDK)	Rec / Pause		White color of CNT503	Frequency Counter	L503	105kHz ± 400Hz
105kHz trap suppression	AC - 712 (TDK)			R371L/R	ACmV - meter Oscilloscope	VR302L/R	Minimize the reading on ACVM

Adjustments	Test tape	Mode	Apply signal to	Measure on	Read on	Adjust with	Adjust to
Target value Bias	Metal AC - 712			TP301L/R		VR701L / R	AC40V
	CrO ₂ AC-513					VR303	AC25V
	Normal AC - 224					VR302	AC15V
Recording Level	AC - 712 (TDK)		400Hz to Line	TP702L/R		VR701L/R	If it necessary repeat bias adjustment See Graph Fig2.
Bias	AC - 712 AC - 513 AC - 224 (TDK)	Rec / Pause	400Hz to Line	Line out	ACmV - meter	See Target Value Bias	
			4kHz - 6.3kHz 10kHz - 12kHz 14kHz - 16kHz to Line in Recording number of Frequency with the same input voltage and play them back.				
19kHz suppression	Arbitrary Tape	Rec / Pause	400Hz to Line in	Line input	ACmV - meter	LF Generator	400mV
				Line output	ACmV - meter Oscilloscope	L701 L/R	Minimize the reading on ACVM

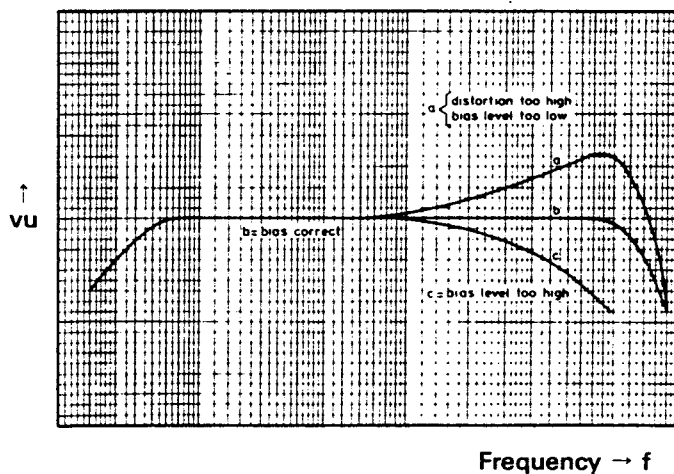


Fig. 2

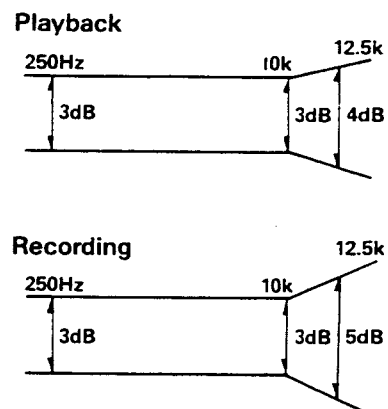


Fig. 1 Allowable Playback/Recording Frequency Response Zone

ALC CIRCUITS AND FIXED RECORD LEVELS

Certain products are designed to accommodate a reduced degree of user involvement and know-how when making tape recordings by omitting the manual record level controls and meters. This is especially common in music centers and cassette players where convenience and ease of operation are of primary importance. In order to enable good recordings to be made, it is then necessary to control the audio levels in the product in a predetermined manner. This can be done by installing an automatic level control (ALC) circuit or by presetting the source signal levels to an appropriate fixed value. The method selected for a given product will depend on the acceptable degree of record level error and its consequences.

DEFINITIONS

For purposes of discussion, it is necessary to define some terms relating to signal levels for products with ALC circuits or fixed record levels.

An ALC circuit consists of a level detector circuit which controls a variable gain stage such that once a predetermined signal level is reached, gain is reduced in order to prevent the signal from increasing further. Until such attenuation occurs, the circuit is operating at maximum gain. To disable the ALC means to hold the circuit at the maximum gain condition under all input signal conditions.

- Input sensitivity: V_{IN} . The input level which gives Dolby level voltage at the Dolby Test Point. (ALC disabled.)
- Transfer level. The level at the Dolby Test Point relative to Dolby level when a signal source is operating at a reference modulation level. (ALC disabled).

In products with fixed record levels, the designer must define the transfer levels so that reasonably good results will be obtained with available source material.

The following terms apply only to ALC-equipped products. Refer to Fig. 1.

- Reference voltage: V_{REF} . The input level which gives limiting level at the Dolby Test Point with the ALC disabled. In the example of Fig. 1, the limiting level is 2 dB above Dolby level at the output. Therefore, V_{REF} is 2 dB above V_{IN} .
- Limiting level. The level at the Dolby Test Point relative to Dolby level with an input signal of $(V_{IN}+10\text{dB})$, with the ALC enabled.
- Attack time. The time required after the application of a 1kHz input signal for the output level at the Dolby Test Point to decay to 3 dB above its final value. Input level for this test is $(V_{REF}+10\text{dB})$.
- Release time. The time required for the signal at the Dolby Test Point to recover to 3 dB below its final value. Time measurement starts when the input level is switched to $(V_{REF}-10\text{dB})$ after a preconditioning period with an input signal of $(V_{REF}+10\text{dB})$.
- Limiter distortion. Distortion measured at the Dolby Test Point with an input signal level of $(V_{IN}+10\text{dB})$.

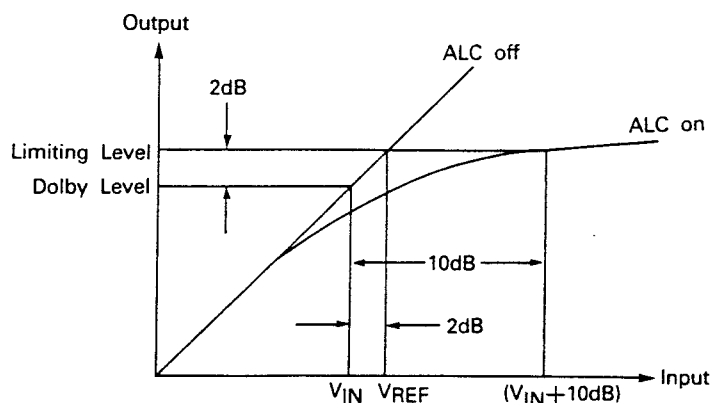
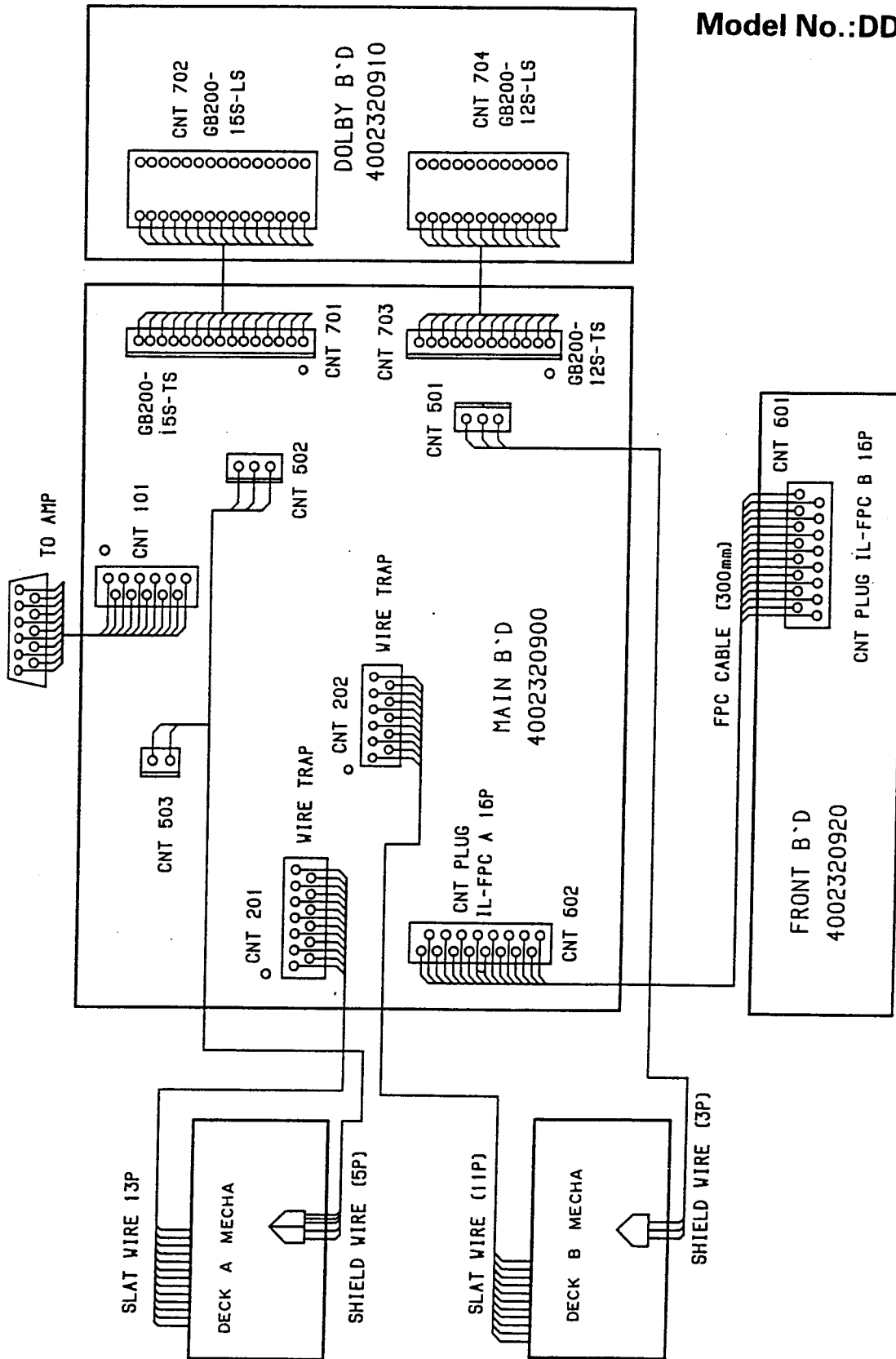


Fig. 1. ALC CIRCUIT SIGNAL LEVELS

WIRING DIAGRAM

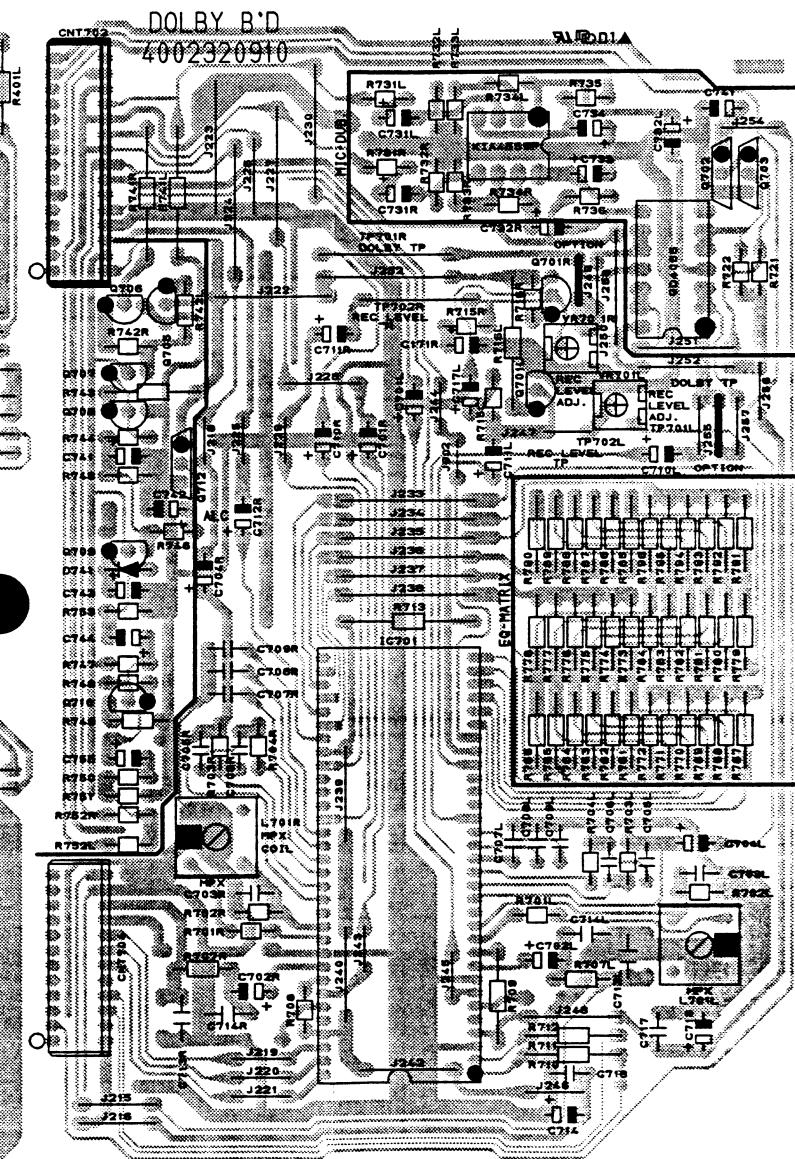
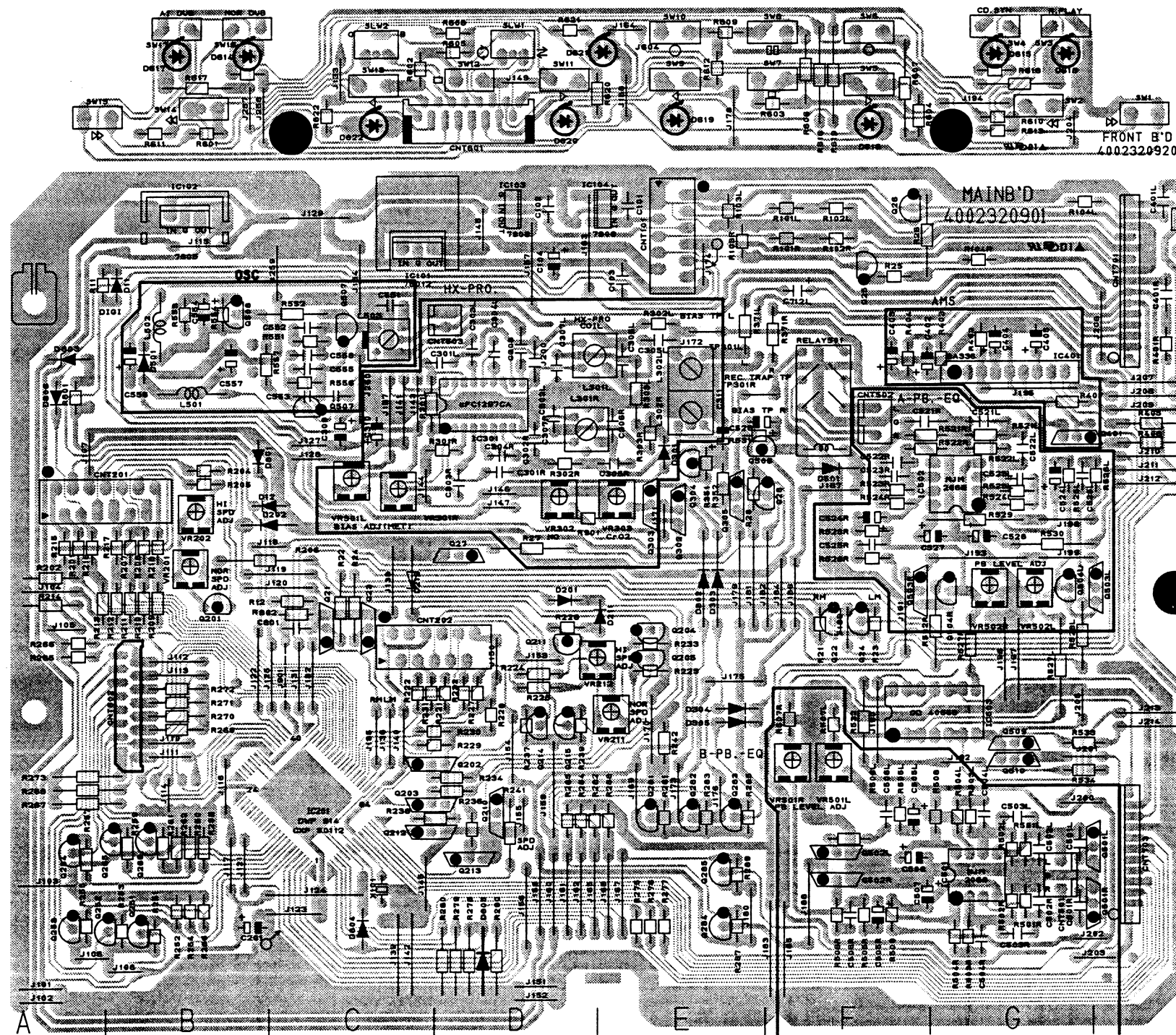
Model No.:DD - 77R



Model No.:DD - 77R



P.C.B(TOP VIEW)

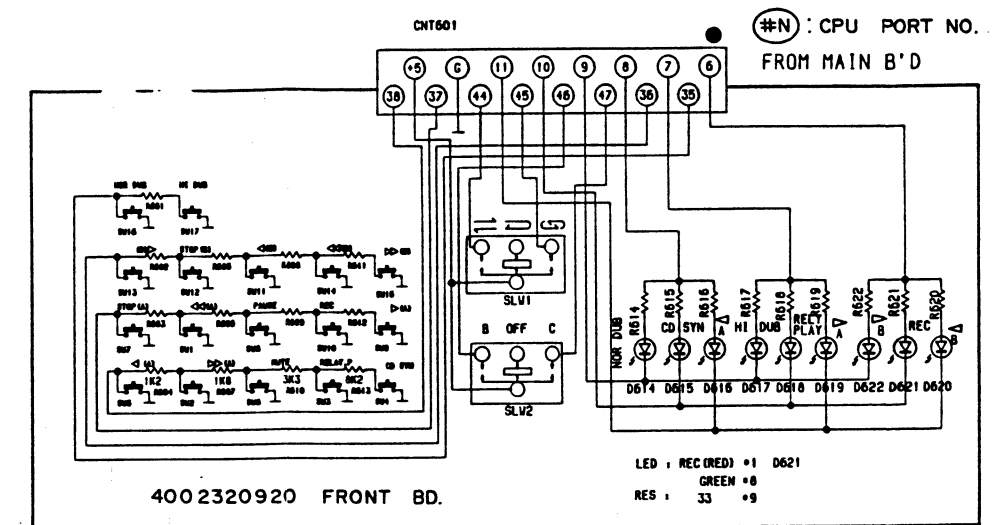
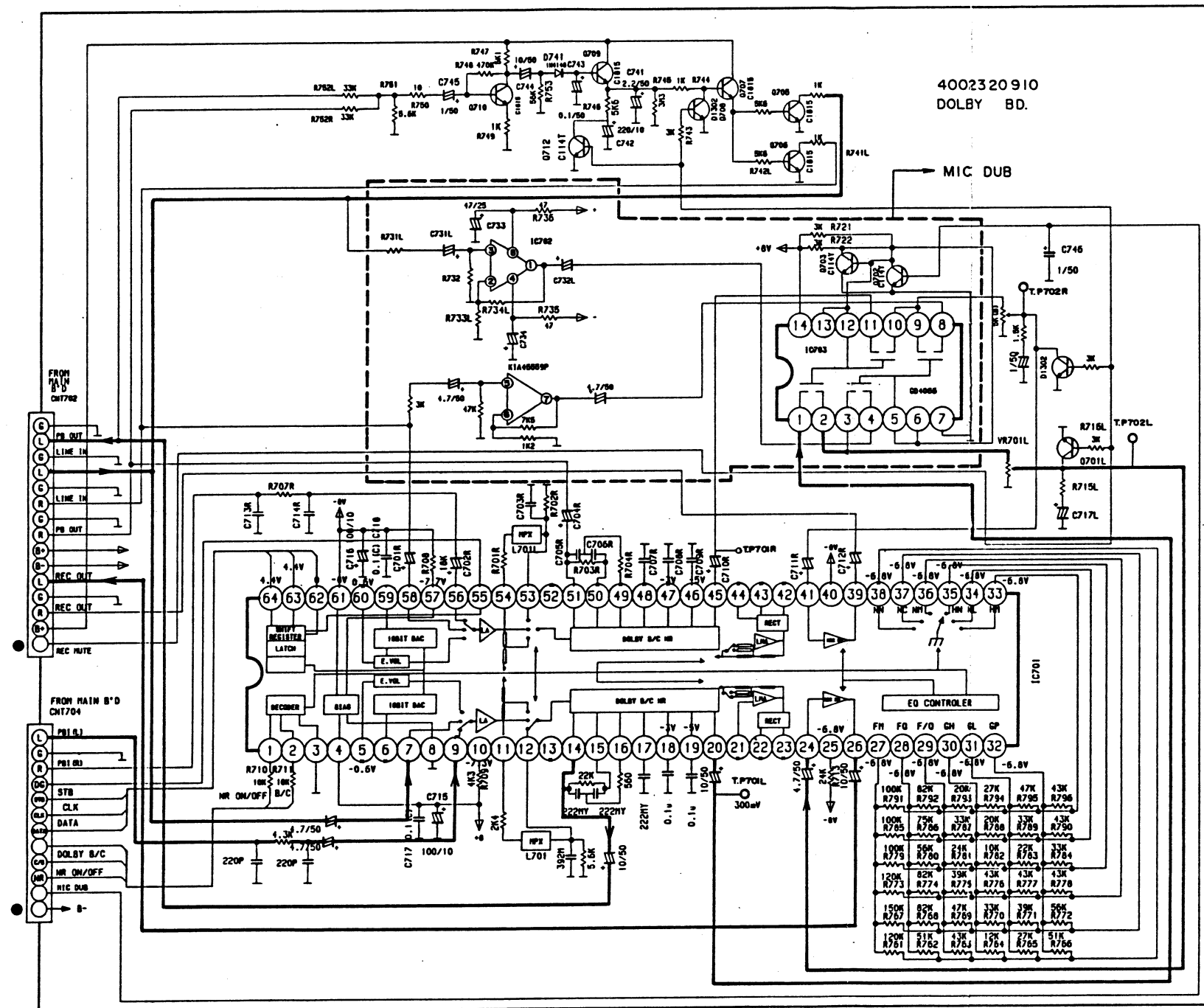


Model No.:DD - 77R



SCHEMATIC DIAGRAM (II)

Model No.:DD - 77R



ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE: Components marked with a $\triangle$ have special characteristics important to safety. If you replace any of these components, read carefully the product safety notice in this manual. Don't degrade the safety of the product through improper servicing. Resistor/Capacitor Tolerance, D:($\pm 0.5\%$), J:($\pm 5\%$), K:(10%), M:($\pm 20\%$), Z:(+80, -20%).

Ref. No.	Description	Mfr. Part No.	Remark
	PCB ASSEMBLY - MAIN	054077320901	
Capacitors			
C101/103	Ceramic Tubular	0.1 uF 50V K	3519104935
C104	Electric SG	470 uF 25V K	3479347141
C301L/R	Mylar	0.001 uF 100V J	3679102120
C302L/R	Ceramic Tubular	560 pF 50V K	3519561935
C303L/R	Mylar	0.022 uF 100V J	3679223120
C304L/R	Mylar	0.027 uF 100V J	3679273120
C305L/R	Ceramic Tubular	330 pF 50V K	3519331935
C306L/R	Ceramic Tubular	220 pF 50V K	3519221935
C307L/R	Mylar	0.047 uF 100V J	3679473120
C308	Ceramic Tubular	10 pF 50V K	3519100935
C309-311	Electric SA	100 uF 10V M	3479210121
C401L/R	Ceramic Tubular	0.1 uF 50V K	3519104935
C402	Electric SA	0.33 uF 50V M	3479233871
C403	Electric SA	0.68 uF 50V M	3479268871
C404	Electric SA	1 uF 50V M	3479210921
C405	Electric SA	1 uF 50V M	3479210921
C501L/R	Ceramic	470 pF 50V K	3519471935
C502L/R	Ceramic	330 pF 50V K	3519331935
C503L/R	Ceramic	100 pF 50V K	3519101935
C504L/R	Mylar	0.022 uF 100V J	3679223120
C505L/R	Electric SA	4.7 uF 50V M	3479247971
C506L/R	Mylar	0.018 uF 100V J	3679183120
C507/508	Electric SA	47 uF 25V M	3479247041
C521L/R	Ceramic	820 pF 50V K	3519821935
C522L/R	Ceramic	100 pF 50V K	3519101935
C523L/R	Mylar	0.022 uF 100V J	3679223120
C524L/R	Electric SA	4.7 uF 50V M	3479247971
C525L/R	Mylar	0.018 uF 100V J	3679183120
C526/528	Electric SA	47 uF 25V M	3479247041
C551	Mylar	0.01 uF 100V J	3679103120
C552/553	Mylar	0.0056 uF 100V J	3679562120
C554	Electric SA	22 uF 25V M	3479222041
C555	Mylar	0.022 uF 100V J	3679223120
C556/557	Electric SA	100 uF 10V M	3479210121
C558	Ceramic	0.01 uF 50V K	3519103935

*Mylar is a registered trademark of E.I. Du Pont de Nemours and Company.

Ref. No.	Description	Mfr. Part No.	Remark
C801	Ceramic 0.1 uF 50V K	3519104935	
Coils			
L301L/R	HX - PRO	2638601240	
L302L/R	REC Trap, 105kHz	2658501080	
L501	Inductor, Tubular, 1mH	2648610284	
L502	Inductor, Tubular, 1mH	2648610284	
L503	Bias OSC, 85kHz	2638201250	
Connectors			
CNT101	Wire Trap 11P	4428525320	
CNT201	Wire Trap 13P	4428525340	
CNT202	Wire Trap 11P	4428505320	
CNT501	Wafer 3P	4428526870	
CNT502	Wafer 3P (G-S)	4428517610	
CNT503	Wafer 2P(GS)	4428517510	
CNT602	CNT Plug FPC 16P	4428526285	
CNT701	Wafer 15P Board to Board	4428550150	
CNT703	Wafer 12P Board to Board	4428550120	
CNT504	Shield Wire 3P to B-Deck Mecha	436303207081	
CNT505	Shield Wire 5P to A-Deck Mecha	435305278631	
CNT603	FPC Cable 16P 30mm	4118616300	
CNT102	System Wire 11P	4358611501	
Diodes			
D11	1N4148M, Switching	2058322101	
D12	1N4148M, Switching	2058322101	
D201	1N4148, Switching	2058322101	
D202	1N4002	2058106100	
D211	1N4148, Switching	2058322101	
D212	1N4002	2058106100	
D301/305	1N4148M, Switching	2058322101	
D501	1N4002	2058106100	
D502	1N4148, Switching	2058322101	
DD802	1N4148, Switching	2058322101	
D803	Zener, 6.8V	2258522113	
D804/806	1N4148, Switching	2058322101	

Ref. No.	Description	Mfr. Part No.	Remark
ICs			
IC101	KIA78012, Regulator	2168606104	
IC102	KIA78005, Regulator	2168606103	
IC103	MC7908, Regulator	2168602102	
IC104	MC7808, Regulator	2168602101	
IC201	CXP50112/DWP914, CPU	2138322146	
IC301	MPC1297CA, HX - PRO	2168013111	
IC401	BA336, AMS	2168022105	
IC501	NJM2068DD	2168020106	
IC502	NJM2068DD	2168020106	
IC503	GD4066B	2138020106	
Resistors : All resistors are 1/5W carbon film $\pm 5\%$ tolerance, unless otherwise specified. M.O is Metal Oxide type. C is Cement type. M is Metal film type.			
R11	22k ohm	3069223970	
R12	220k ohm	3069224970	
R21	47k ohm	3069473970	
R22	5.6k ohm	3069562970	
R23	47k ohm	3069473970	
R24	5.6k ohm	3069562970	
R25	3k ohm	3069302970	
R26	3k ohm	3069302970	
R27	5.6k ohm	3069562970	
R28	47k ohm	3069473970	
R101L/R	47k ohm	3069473970	
R102L/R	7.5k ohm	3069752970	
R103L/R	3k ohm	3069302970	
R104L/R	2.4k ohm	3069242970	
R201	10k ohm	3069103970	
R202	18k ohm	3069183970	
R204	4.3k ohm	3069432970	
R205	3k ohm	3069302970	
R206	47k ohm	3069473970	
R207/20	1k ohm	3069102970	
R209-21	47k ohm	3069473970	
R215/21	1k ohm	3069102970	
R221	10k ohm	3069103970	
R222	18k ohm	3069183970	
R224	4.3k ohm	3069432970	
R225	3k ohm	3069302970	
R226	47k ohm	3069473970	
R227	1k ohm	3069102970	
R228-230	47k ohm	3069473970	
R231/232	1k ohm	3069102970	

Ref. No.	Description	Mfr. Part No.	Remark
R233	47k ohm	3069473970	
R234	750 ohm	3069751970	
R235	47k ohm	3069473970	
R236	750 ohm	3069751970	
R237	47k ohm	3069473970	
R238	750 ohm	3069751970	
R239	47k ohm	3069473970	
R240	750 ohm	3069751970	
R241	4.7k ohm	3069472970	
R242	47k ohm	3069473970	
R251	47k ohm	3069473970	
R252	5.6k ohm	3069562970	
R253	47k ohm	3069473970	
R254	5.6k ohm	3069562970	
R255	47k ohm	3069473970	
R256	5.6k ohm	3069562970	
R257-262	1k ohm	3069102970	
R275/280	10k ohm	3069103970	
R281	47k ohm	3069473970	
R282	5.6k ohm	3069562970	
R283	47k ohm	3069473970	
R284	5.6k ohm	3069562970	
R285	47k ohm	3069473970	
R286	5.6k ohm	3069562970	
R287	47k ohm	3069473970	
R288	5.6k ohm	3069562970	
R289	47k ohm	3069473970	
R290	5.6k ohm	3069562970	
R301L/R	33k ohm	3069333970	
R302L/R	180k ohm	3069184970	
R303L/R	10 ohm	3069100970	
R351	47k ohm	3069473970	
R352	5.6k ohm	3069562970	
R401L/R	47k ohm	3069473970	
R402	910 ohm	3069911970	
R403	390k ohm	3069394970	
R404	270k ohm	3069274970	
R405	3.9k ohm	3069392970	
R406	6.8k ohm	3069682970	
R407	10k ohm	3069103970	
R501L/R	100k ohm	3069104970	
R502L/R	33 ohm	3069330970	
R503L/R	100k ohm	3069104970	
R504L/R	6.8k ohm	3069682970	
R505L/R	3k ohm	3069302970	

Ref. No.	Description	Mfr. Part No.	Remark
R506L/R	3k ohm	3069302970	
R507L/R	33k ohm	3069333970	
R508/509	47 ohm	3069470970	
R521L/R	100k ohm	3069104970	
R522L/R	33 ohm	3069330970	
R523L/R	100k ohm	3069104970	
R524L/R	6.8k ohm	3069682970	
R525L/R	3k ohm	3069302970	
R526L/R	3k ohm	3069302970	
R527L/R	3k ohm	3069333970	
R528L/R	3k ohm	3069302970	
R529/530	47 ohm	3069470970	
R531	2k ohm	3069202970	
R532	470 ohm	3069471970	
R533/534	3k ohm	3069302970	
R551	33k ohm	3069333970	
R552	22 ohm	3069220970	
R553	8.2k ohm	3069822970	
R554	22k ohm	3069223970	
R556	33k ohm	3069333970	
R557	22 ohm	3069220970	
R801	1.8 k ohm	3069182970	
Variable Resistors - Semifixed			
VR201	2K(B), A - Deck Nor SPD	3248020243	
VR202	2K(B), A - Deck High SPD	3248020243	
VR211	2K(B), B - Deck Nor SPD	3248020243	
VR212	2K(B), B - Deck High SPD	3248020243	
VR301L/R	10K(B), Metal Bias	3248010343	
VR302	500(B), Nor Bias	3248050143	
VR303	500(B), Cro2 Bias	3248050143	
VR501L/R	10K(B), B - Deck PB Level	3248010343	
VR502L/R	10K(B), A - Deck PB Level	3248010343	
Transistors			
Q21	DTC114Y, REC Mute, Silicon	2208622106	
Q22	KTA1015Y, REC Mute, Silicon, PNP	2208206105	
Q23	DTC114Y, Line Mute, Silicon	2208622106	
Q24	KTA1015Y, Line Mute, Silicon, PNP	2208206105	
Q25	KTD1302, Line Mute, Silicon, NPN	2208606112	
Q26	KTD1302, Line Mute, Silicon, NPN	2208606112	
Q27	DTC114Y, REC Out, Silicon	2208622106	
Q28	KTA1015Y, REC Out, Silicon, PNP	2208206105	

Ref. No.	Description	Mfr. Part No.	Remark
Q201	MPS A56, A-Deck SPD, Silicon, PNP	2208206113	
Q202	DTC114Y, A-Deck CPM, Silicon	2208622106	
Q203	DTC114Y, A-Deck SOL, Silicon	2208622106	
Q204	MPS A1515, A-Deck CPM, Silicon, PNP	2208406117	
Q205	MPS A1515, A-Deck SOL, Silicon, PNP	2208406117	
Q210	DTC114YS, Nor High SPD SW, Silicon	2208622106	
Q211	MPS A56, B-Deck SPD, Silicon, PNP	2208206113	
Q212	DTC114YS, B-Deck CPM, Silicon	2208622106	
Q213	DTC114YS, B-Deck SOL, Silicon	2208622106	
Q214	MPS A1515, B-Deck CPM, Silicon, PNP	2208406117	
Q215	MPS A1515, B-Deck SOL, Silicon, PNP	2208406117	
Q251	KTA1015Y, Led Scan, Silicon, PNP	2208206105	
Q252	KTA1015Y, Led Scan, Silicon, PNP	2208206105	
Q253	KTA1015Y, Led Scan, Silicon, PNP	2208206105	
Q254	KTD1302, Led Scan, Silicon, NPN	2208606112	
Q255	KTD1302, Led Scan, Silicon, NPN	2208606112	
Q256	KTD1302, Led Scan, Silicon, NPN	2208606112	
Q281	KTA1015Y, Nor, Silicon, PNP	2208206105	
Q282	KTA1015Y, CrO2, Silicon, PNP	2208206105	
Q283	KTA1015Y, Metal, Silicon, PNP	2208206105	
Q284	KTA1015Y, Silicon, PNP	2208206105	
Q285	KTA1015Y, DUB x 1.5, Silicon, PNP	2208206105	
Q302	DTC114Y, Nor Bias, Silicon	2208622106	
Q303	DTC114Y, CrO2 Bias, Silicon	2208622106	
Q304	MPS A56, REC Out, Silicon, PNP	2208206113	
Q305	DTC114Y, REC Out, Silicon	2208622106	
Q401	DTC114Y, AMS Out, Silicon	2208622106	
Q501L/R	DTC114T, B-Deck DUB, Silicon	2208622108	
Q502L/R	DTC114T, B-Deck 70us, Silicon	2208622108	
Q503L/R	DTC114T, A-Deck 70us, Silicon	2208622108	
Q504L/R	KTD1302, Silicon, NPN	2208606112	
Q505	MPS A06, Relay, Silicon	2208206104	
Q506	KTC2236A, OSC, Silicon	2028406117	
Q507	KTC2236A, OSC, Silicon	2028406117	
Q508	KTD1302, OSC, Silicon, NPN	2208606112	
Q509	DTC114Y, GD4066 SW, Silicon	2208622106	
Q510	DTC114Y, GD4066 SW, Silicon	2208622106	
Others			
RELAY501	RY 12 W-K	5528001020	
X101	Resonator 4.19kHz	3938101880	
GND101	Ground Terminal	4235007210	
37	Fastener	6528301710	
38	Heatsink Regulator TR	7505202410	
39	Heatsink Regulator TR	7505206230	
•	PCB - Main	4002320901	

Ref. No.	Description	Mfr. Part No.	Remark
	PCB ASSEMBLY - FRONT	054077320920	
Connector			
CNT601	CNT Wafer IL-FPC B 16P	4428526700	
Diodes			
D614-620	Led, Green	2308220331	
D621	Led, Red	2308220127	
D622	Led, Green	2308220331	
Resistors			
R601-604	1.2k ohm	3069122970	
R605-607	1.8k ohm	3069182970	
R608-610	3.3k ohm	3069332970	
R611-613	8.2k ohm	3069822970	
R614-622	33 ohm	3069330970	
Switches			
SW1-SW17	Switch Tact	4658003710	
SW18/SW19	Switch Slide	4618009210	
Other			
•	PCB - Front	4002320920	

	PCB ASSEMBLY - DOLBY	054077320910	
Capacitors			
C701L/R	Electric SA	4.7 uF 50V M	3479247971
C702L/R	Electric SA	4.7 uF 50V M	3479247971
C703L/R	Mylar	0.0039 uF 100V J	3679392120
C704L/R	Electric SA	10 uF 50V M	3479210071
C705L/R	Mylar	0.0022 uF 100V J	3679222120
C706L/R	Mylar	0.0022 uF 100V J	3679222120
C707L/R	Mylar	0.0022 uF 100V J	3679222120
C708L/R	Mylar	0.1 uF 63V J	3679104297
C709L/R	Mylar	0.1 uF 63V J	3679104297
C710L/R	Electric SA	10 uF 50V M	3479210071
C711L/R	Electric SA	4.7 uF 50V M	3479247971
C712L/R	Electric SA	10 uF 50V M	3479210071
C713L/R	Ceramic	220 pF 50V K	3519821935

Ref. No.	Description	Mfr. Part No.	Remark
C714L/R	Ceramic 220 pF 50V K	3519821935	
C715/716	Electric SA 100 uF 10V M	3479210121	
C717L/R	Electric SA 0.1 uF 50V M	3479210871	
C718/719	Ceramic 1.01 uF 50V K	3519103935	
C731L/R	Electric SA 4.7 uF 50V M	3479247971	
C732L/R	Electric SA 4.7 uF 50V M	3479247971	
C733/734	Electric SA 47 uF 25V M	3479247071	
C741	Electric SA 2.2 uF 50V M	3479222971	
C742	Electric SA 220 uF 10V M	3479221971	
C743	Electric SA 0.1 uF 50V M	3479210871	
C744	Electric SA 10 uF 50V M	3479210071	
C745	Electric SA 1 uF 50V M	3479210971	
Coils			
L701L/R	MPX Filter, 105kHz	2658301120	
Connectors			
CNT702	GB200 15S LS Board to Board	4428560150	
CNT704	GB 200 12S LS Board to Board	4428560120	
Diode			
D741	1N4148, ALC	2058322101	
ICs			
IC701	HA12157NT, Dolby	2168011135	
IC702	KIA45559D, Mic DUB	2168206104	
IC703	GD4066B, Mic DUB	2138020106	
Resistors			
R701L/R	2.4k ohm	3069242970	
R702L/R	5.6k ohm	3069562970	
R703L/R	22k ohm	3069223970	
R704L/R	560 ohm	3069561970	
R707L/R	3.3k ohm	3069332970	
R708	18k ohm	3069183970	
R709	4.3k ohm	3069432970	
R710	10k ohm	3069103970	
R711	10k ohm	3069103970	

Ref. No.	Description	Mfr. Part No.	Remark
R713	24k ohm	3069243970	
R715L/R	2.2k ohm	3069222970	
R716L/R	3k ohm	3069302970	
R721/722	2k ohm	3069202970	
R731L/R	3k ohm	3069302970	
R732L/R	47k ohm	3069473970	
R733L/R	1.2k ohm	3069122970	
R734L/R	7.5k ohm	3069752970	
R735/736	47 ohm	3069470970	
R741L/R	1k ohm	3069102970	
R742	5.6k ohm	3069562970	
R743	3k ohm	3069302970	
R744	1k ohm	3069102970	
R745	3.3M ohm	3069335970	
R746	5.6k ohm	3069562970	
R747	5.1k ohm	3069512970	
R748	470k ohm	3069474970	
R749	1k ohm	3069102970	
R750	10 ohm	3069100970	
R751	5.6k ohm	3069562970	
R752L/R	33k ohm	3069333970	
R753	56k ohm	3069563970	
R761	120k ohm	3069124970	
R762	33k ohm	3069333970	
R763	33k ohm	3069333970	
R764	12k ohm	3069123970	
R765	24k ohm	3069243970	
R766	47k ohm	3069473970	
R767	150k ohm	3069154970	
R768	56k ohm	3069563970	
R769	47k ohm	3069473970	
R770	33k ohm	3069333970	
R771	33k ohm	3069333970	
R772	56k ohm	3069563970	
R773	120k ohm	3069124970	
R774	75k ohm	3069753970	
R775	27k ohm	3069273970	
R776	43k ohm	3069433970	
R777	43k ohm	3069433970	
R778	43k ohm	3069433970	
R779	150k ohm	3069154970	
R780	47k ohm	3069473970	
R781	22k ohm	3069223970	
R782	12k ohm	3069123970	
R783	27k ohm	3069273970	
R784	22k ohm	3069223970	
R785	100k ohm	3069104970	

Ref. No.	Description	Mfr. Part No.	Remark
R786	68k ohm	3069683970	
R787	27k ohm	3069273970	
R788	22k ohm	3069223970	
R789	33k ohm	3069333970	
R790	43k ohm	3069433970	
R791	100k ohm	3069104970	
R792	82k ohm	3069823970	
R793	22k ohm	3069223970	
R794	33k ohm	3069333970	
R795	47k ohm	3069473970	
R796	43k ohm	3069433970	
Variable Resistors-Semifixed			
VR701L/R	5K (B)	3248050243	
Transistors			
Q701L/R112	KTD1302S, REC Mute, Silicon, NPN	2208606112	
Q702/7036	DTC114YS, GD4066 SW, Silicon	2208622106	
Q705-711	KTC1815Y, ALC, Silicon, NPN	2208606104	
Q712	DTC114T, ALC, Silicon	2208622108	
Other			
•	PCB - Dolby	4002320910	

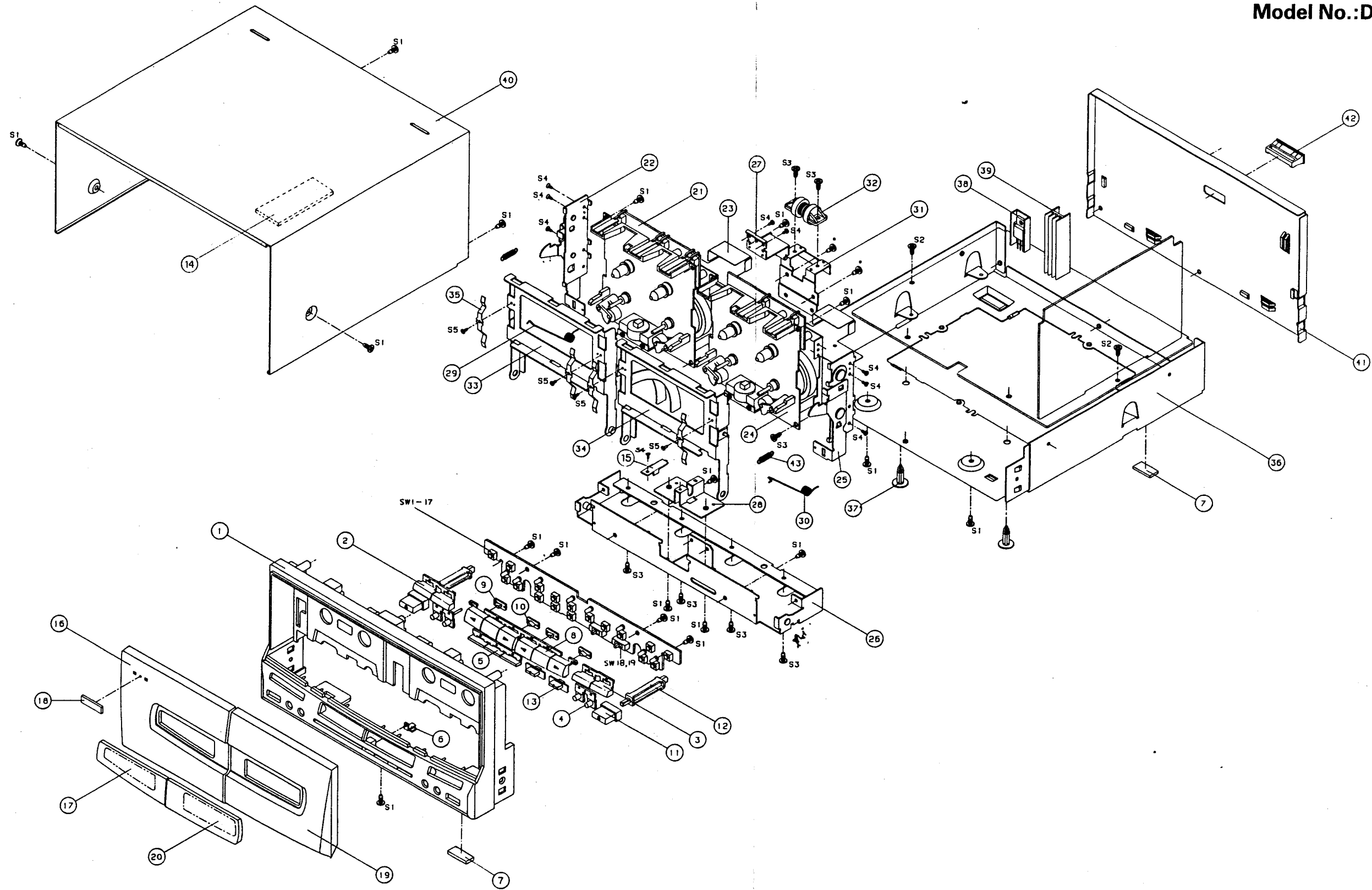
MECHANICAL PARTS LIST

Ref. No.	Description	Q'ty	Mfr. Part No.	Remark
1	Panel Front, ABS. Black	1	048501026011	Dom
1	Panel Front, ABS. Black	1	048501026012	A,B,C,D,E,F,G
2	Button 2Key (L), ABS. Black	1	048545108011	
3	Button 2Key (R), ABS. Black	1	048545108111	
4	Button Light, PC. Milk	2	8545108310	
5	Button 3Key, ABS. Black	1	8545108510	
6	Indicator (B), Acryl. Milk	1	8555044310	
7	Foot Cushion, Rubber. Black	4	6715021220	
8	Button 6Key, ABS. Black	1	048543046911	
9	Indicator (A) - L, Acryl. Milk	2	8555042710	
10	Indicator (A) - R, Acryl. Milk	2	8555042610	
11	Button Eject, ABS. Black	2	8545108210	
12	Shaft Eject, ABS. Black	2	8545111110	
13	Knob Silde, ABS. Black	2	048545108611	
14	Sponge, Black	1	6715022120	
15	Bracket Mecha (C), Secc. Zn	1	6505129610	
16	Door Deck (L), ABS. Black	1	048562003411	Dom
16	Door Deck (L), ABS. Black	1	048562003412	A,B,C,D,E,F,G
17	Window Door (L), Acryl. Smoke	1	048555043811	
18	Badge, ABS. Gold (INKEL)	1	048535038311	Dom
18	Badge, ABS. Gold (SHERWOOD)	1	048535038411	A,B,C,D,E,F,G
19	Door Deck (R), ABS. Black	1	048562003511	Dom
19	Door Deck (R), ABS. Black	1	048562003512	A,B,C,D,E,F,G
20	Window Door (R), Acryl. Smoke	1	048555043911	
21	Deck Mecha (A)	1	5708013010	
22	Eject Mecha (L), Secc. Zn	1	6123622611	
23	Shield Fence	2	6163112410	
24	Deck Mecha (B)	1	5708013110	
25	Eject Mecha (R), Secc. Zn	1	6123622711	
26	Frame Mecha, Secc. Zn	1	6122635910	
27	Bracket Mecha (A), Secc. Zn	1	6505126910	
28	Bracket Mecha (B), Secc. Zn	1	6505127310	
29	Spring Door (L), SWP. Black	1	6555012010	
30	Spring Door (R), SWP. Black	1	6555012110	
31	Bracket Damper, Secc. Zn	1	6505127210	
32	Damper, ABS. Black	2	6708000310	
33	LID Cassette (L), Secc. Black	1	046122635711	
34	LID Cassette (R), Secc. Black	1	046122635811	
35	Spring Cassette	4	6555802610	
36	Chassis-Main, Secc. Zn	1	6121609910	
37	Fastener	2	6528301710	
38	Heatsink Regulator TR	1	7505202410	
39	Heatsink Regulator TR	1	7505206230	
40	Cover Top, Secc. Black	1	046122025021	
41	Chassis Back, Secc. Black	1	046102035011	Dom
41	Chassis Back, Secc. Black	1	046102035021	A
41	Chassis Back, Secc. Black	1	046102035031	B
41	Chassis Back, Secc. Black	1	046102035041	C
41	Chassis Back, Secc. Black	1	046102035051	D

Ref. No.	Description	Q'ty	Mfr. Part No.	Remark
41	Chassis Back, Secc. Black	1	046102035061	E F G
41	Chassis Back, Secc. Black	1	046102035071	
41	Chassis Back, Secc. Black	1	046102035081	
42	Stopper Connector (11P), Nylon. Black	1	6518002110	
43	Spring Eject, SWP. Black	2	6555608310	
HardwareKit				
Internals				
S1	Screw #2 BTC 3x8 ZNB	9	8109230083	
S2	Screw #2 WPTC 3x8 ZNY	2	8159230081	
S3	Screw SAM 3x6 ZNY	8	8119430061	
S4	Screw BM 2x5 ZNY	11	8009120051	
S5	Screw BM 2x2 ZNY	4	8009120021	
Externals				
S1	Screw #2 BTC 3x8 ZNB	9	8109230083	
Others				
SW1-SW17	Switch Tact	17	4658003710	
SW18/SW19	Switch Slide	2	4618009210	

EXPLODED VIEW

Model No.:DD - 77R



Exploded view diagram of a mechanical assembly, likely a motor or pump, showing various components and their assembly sequence. The diagram includes a central motor assembly with a flywheel, a pump head, and various internal components like valves, pistons, and a crankshaft. The assembly is shown in a disassembled state to illustrate the relationship between parts.

NO. PART NAME

1. ASS'Y HOLDER HEAD
2. FLAME HEAD
3. LEVER HEAD
4. SPRING ASSEMBLY
5. GEAR ARM HEAD
6. GEAR ARM HEAD
7. SPRING CASSETTE
8. EJECT LOCK
9. CAP REEL
10. ASS'Y PINCH ARM L
11. CHASSIS HEAD
12. ASS'Y PINCH ARM R
13. ASS'Y ARM PLAY L
14. ASS'Y ARM PLAY R
15. GEAR PLAY L
16. GEAR PLAY R
17. ASS'Y SUB REEL L
18. ASS'Y SUB REEL R
19. SOLENOID
20. WIRE
21. ARM RV5
22. GEAR FF
23. ASS'Y ARM FR
24. ASS'Y PULLEY FR
25. BELT FR
26. ASS'Y FLYWHEEL L
27. ASS'Y FLYWHEEL R
28. METAL
29. ARM BRAKE
30. ASS'Y SUB REEL R
31. ARM TRIGGER
32. GEAR CAM
33. METAL
34. ASS'Y FLYWHEEL R

NO. PART NAME

35. METAL
36. WIRE (11P)
37. HOLDER WIRE
38. P.C. BOARD
39. SWITCH MODE
40. SWITCH (LEAF)
41. HALL (C)
42. BRACKET FW
43. ASS'Y MOTOR
44. WIRE
45. BELT MAIN
46. P.C. BOARD
47. HOUSING

NO. PART NAME

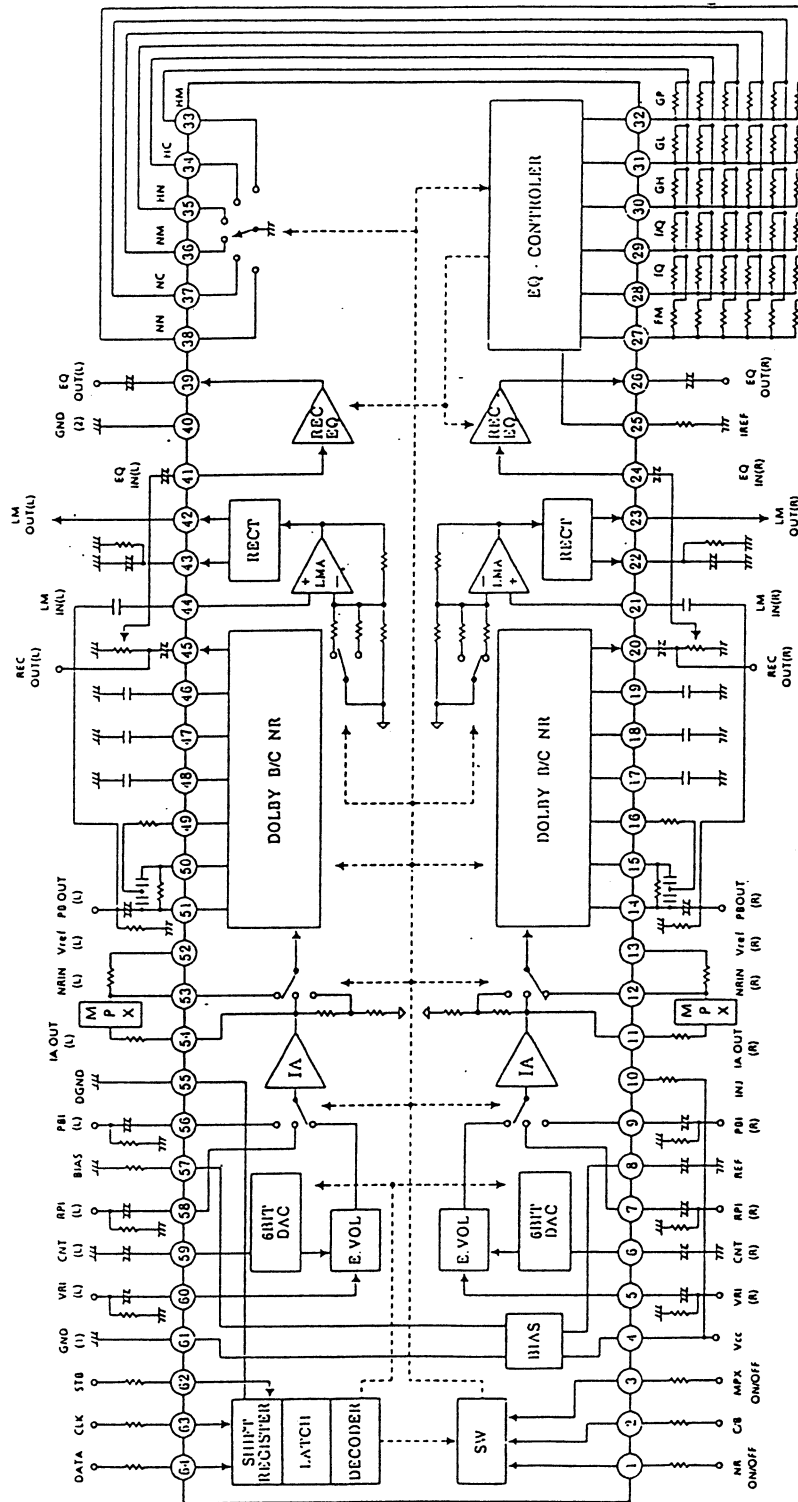
48. METAL
49. WIRE (11P)
50. HOLDER WIRE
51. P.C. BOARD
52. SWITCH MODE
53. SWITCH (LEAF)
54. HALL (C)
55. BRACKET FW
56. ASS'Y MOTOR
57. WIRE
58. BELT MAIN
59. P.C. BOARD
60. HOUSING

NO. PART NAME

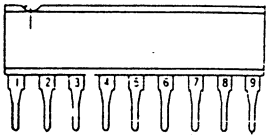
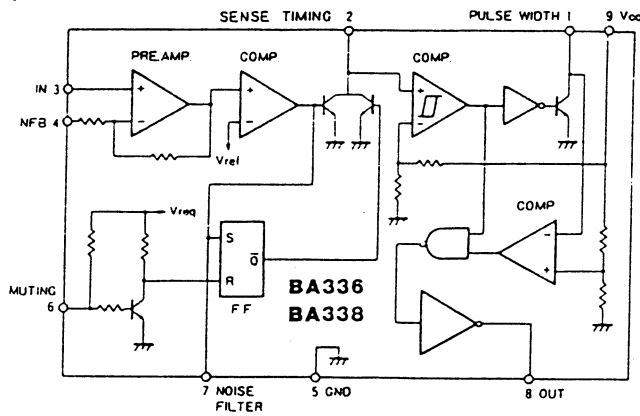
61. SPRING
62. SCREW
63. WASHER
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SEMICONDUCTOR LEAD IDENTIFICATION & INTERNAL DIAGRAM

HA 12157NT : IC701

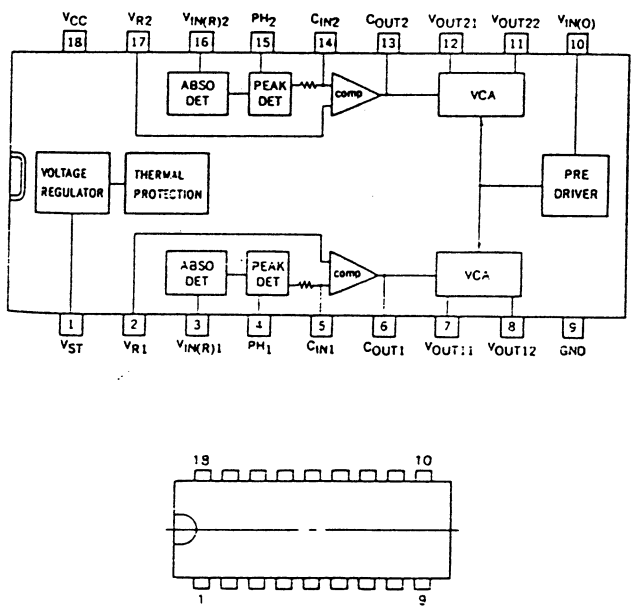


BA336 : IC401



MPC 1297CA : IC301

BLOCK DIAGRAM



CONNECTION DIAGRAM

NO.	CONNECTION
1	VOLTAGE REGULATOR
2	COMP REF ₁
3	SIGNAL INPUT ₁
4	PEAK HOLD ₁
5	COMP INPUT ₁
6	COMP OUTPUT ₁
7	VCA OUTPUT ₁
8	VCA OUTPUT ₁₂
9	GND
10	BIAS OSC INPUT
11	VCA OUTPUT ₂₁
12	VCA OUTPUT ₂₂
13	COMP OUTPUT ₂
14	COMP INPUT ₂
15	PEAK HOLD ₂
16	SIGNAL INPUT ₂
17	COMP REF ₂
18	VCC

SEMICONDUCTOR VOLTAGE CHART

Ref. No		No Signal(REC ON)	Ref. No		No Signal(REC ON)
IC 201	1	4.2V	IC701	1	0V(NR OFF) 5V(NR ON)
	2/3	4.8V		2	0V(DOLBY B) 5V(DOLBY C)
	4/5	4.2V		3	0V(MPX ON)
	6-8	4.8V		4	8V
	9-11	1V		5	0.6V
	12-31	0V		6-9	0V
	32-38	5V		10	-7.3V
	39-41	0V		11-17	0V
	42	5V		18	-3V
	43-51	0V		19	-5V
	52/53	5V		20-24	0V
	54-57	0V		25	-6.8V
	58-61	5V		26	0V
	62-66	0V		27-38	-6.8V
	67	5V		39	0V
	68-71	0V		40	-8V
	72	2.2V		41-45	0V
	73	5V		46	-5V
	74	2.1V		47	-3V
	75	5V		48-56	0V
	76	0V		57	-7.7V
	77-79	5V		58/59	0V
	80	0V		60	0.6V
IC 301	1	-5.8V		61	-8V
	2	-6.0V		62	0V
	3	-5.8V		63/64	4.4V
	4	-7.3V			
	5	-7.9V			
	6	5.6V			
	7.8	-8V(6.1V)			
	9	-8V			
	10	-7.3V			
	11/12	-8V(6.1V)			
	13	5.6V			
	14	-7.9V			
	15	-7.4V			
	16	-5.8V			
	17	-6.0V			
	18	8V			
IC401	1-3	0V			
	4	1V			
	5	0V			
	6-8	0V			
	9	8V			

COMPACT DISK EXTENDED GRAPHICS PLAYER CDEG-77R SPECIFICATIONS

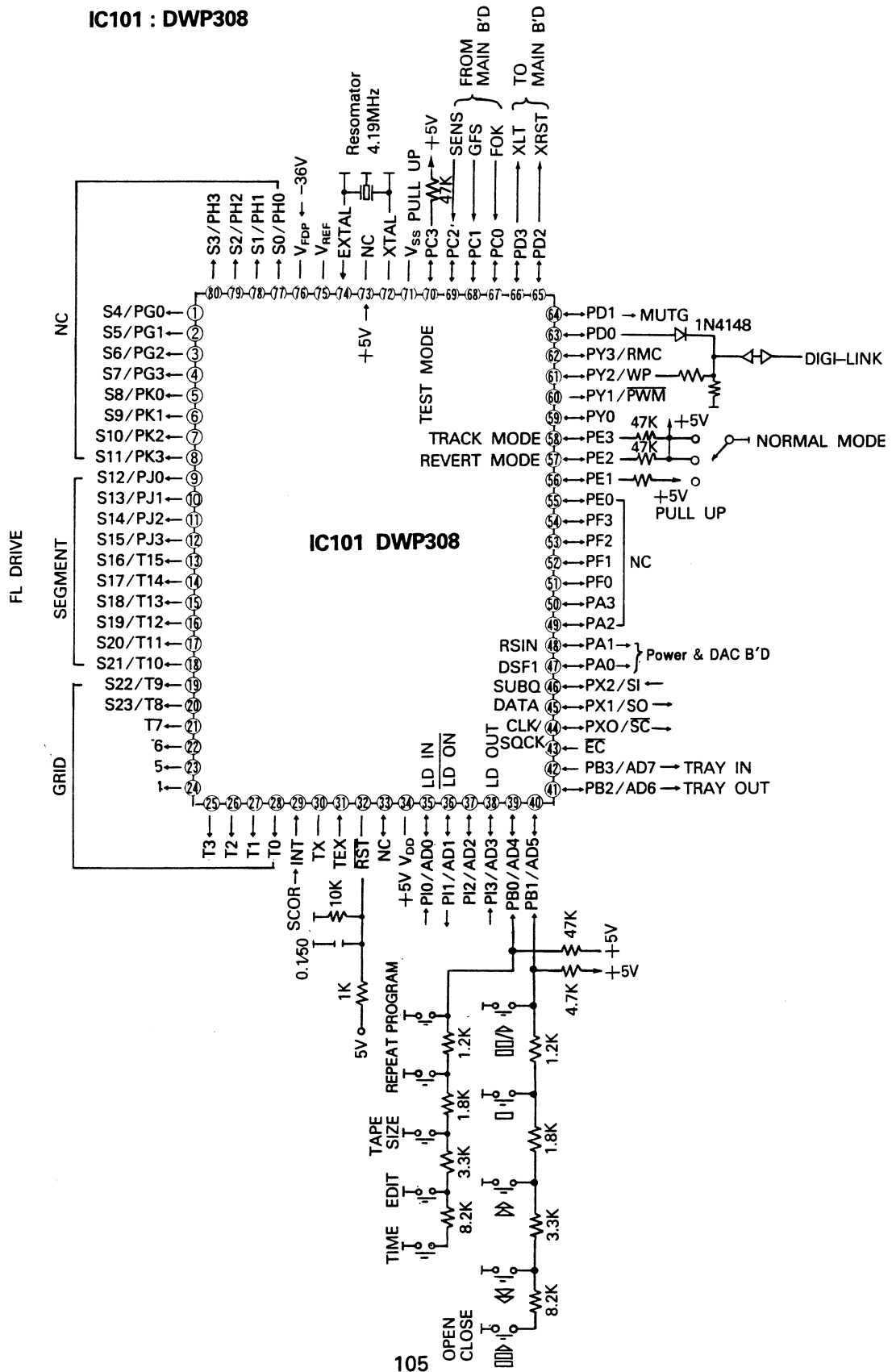
Compact Disk Extended Graphics Player(at AMP Speaker Output 2Vrms)

Frequency Response	
20~20,000Hz	± 1 dB
Signal to Noise Ratio, Signal to Noise Ratio, unweighted	70dB
Dynamic Range, Dynamic Range, unweighted	68dB
Distortion	
1kHz / 0dB	0.06%
Channel Separation, Selective	
1kHz	52dB
Channel Unbalance	
1kHz	± 1 dB
Access time	
Track $\rightarrow$ Track	1.5 sec.
Close $\rightarrow$ Music	6.0 sec.
Disc Defects	
Black DOT	600 μ m
Interrupt	700 μ m
Fingerprint	All μ m
Dimensions	235(W) $\times$ 73(H) $\times$ 240(D)mm
Weight(Net)	2kg(4.4lbs)

Note : Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the European standard, and provides information on regional circuit modification through use of alternate schematic diagram and information on regional component variations through use of parts list. Design and specifications subject to change without notice for improvement.

CIRCUIT DESCRIPTION

IC101 : DWP308



Input and Output Terminal Functions

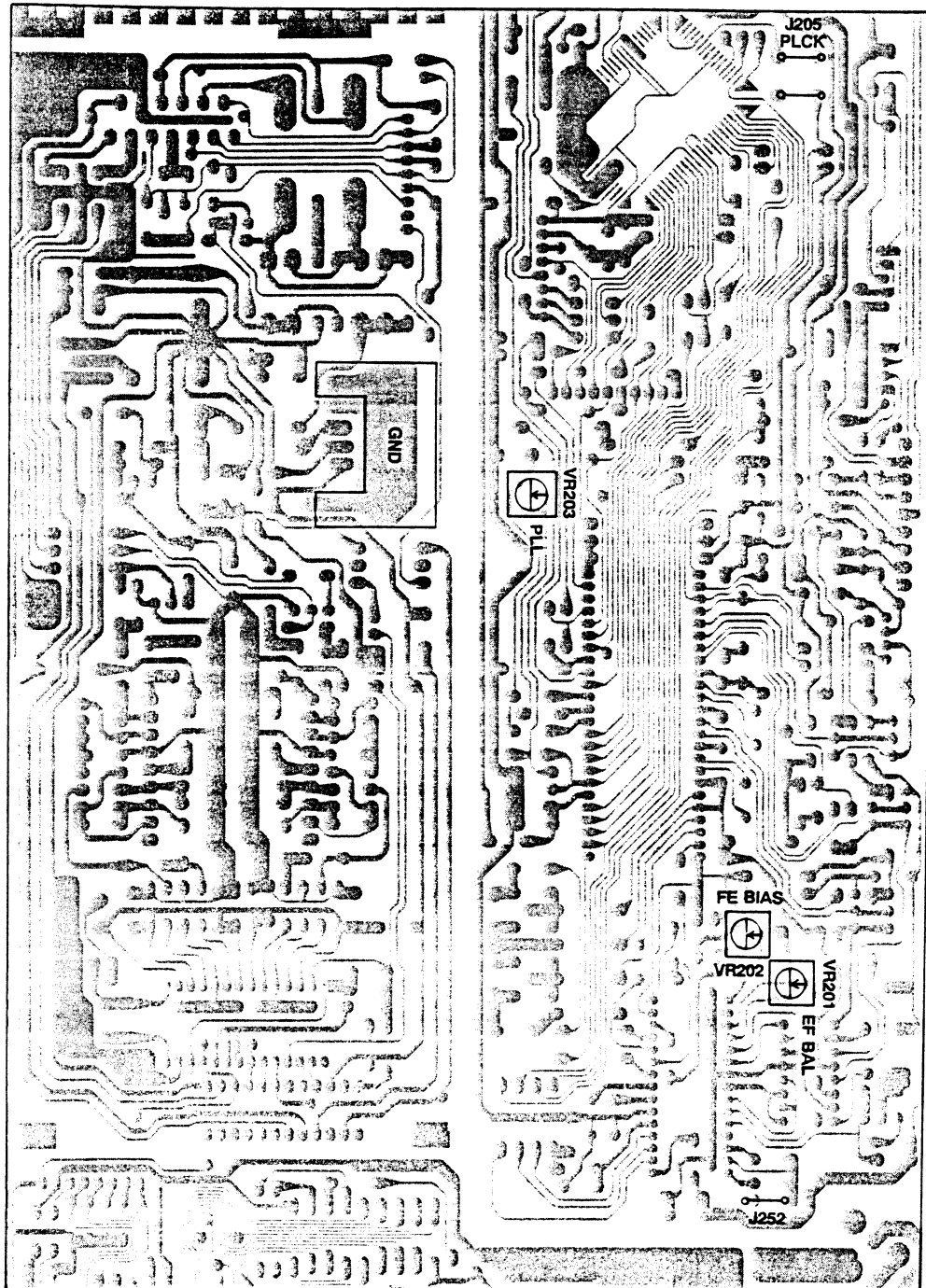
Pin No.	I/O	Description
P34(V _{DD})	Input	Positive power supply pin.
P71(V _{SS})	Input	GND pin.
P74(EXTAL)	Input	Clock generator circuit input pin. A crystal oscillator or ceramic resonator is to be connected between the EXTAL and XTAL pins. When using an external clock input, connect a clock generation source to the EXTAL pin and leave the XTAL pin open.
P72(XTAL)	Output	Clock generator circuit output.
P32($\overline{\text{RST}}$)	Input/ Output	This is the output of the built-in power-ON-reset circuit. When an external reset signal is to be received, this pin must be maintained at a Low-level(0V) for a period of at least 2 instruction cycles.
P29 (INT)	Input	Interrupt input pin. Either the edge or level mode is selected according to the program.
P43 ($\overline{\text{EC}}$)	Input	Event counter input pin.
P46 (SI/PX2)	Input	Performs both the serial interface (8-bit) input pin and port X bit 2 (input) functions.
P45 (SO/PX1)	Input/ Output	Performs both the serial interface (8-bit) output pin and port X bit 1 (input) functions.
P44($\overline{\text{SC}}$ /PX0)	Input/ Output	Performs both the serial interface clock I/O pin and Port X bit 0 (input) functions.
P62(RMC/PY3)	Input	Performs both the remote control input pin and port Y bit 3(input) functions.
P61(WP/PY2)	Input	Performs both the standby state clearing wake-up input and the port Y bit 2(input) functions.
P60($\overline{\text{PWM}}$ /PY1)	Output	Performs both the PWM generator(14-bit) output and port Y bit 1(Output) functions.
P59(PY0)	Output	Port Y bit 0 output pin.
P47~P50 (PA0~PA3)	Input/ Output	4-bit I/O port. Each bit can be programmed to be either an input or output. The tristate output configuration is employed.
P39~P42 (PB0/AD4~ PB3/AD7)	Input/ output	4-bit I/O port which performs the same functions as port A and doubles as the A/D converter input pin.
P67~P70 (PC0~PC3)	Input/ output	4-bit I/O port. Each bit can be programmed to be either an input or output. The tristate output configuration is employed.
P63~P66 (PD0~PD3)	Input/ output	4-bit I/O port which performs the same functions as port C.
P55~P58 (PE0~PE3)	Input/ output	4-bit I/O port which performs the same functions as port C.

Pin No.	I/O	Description
P51~P54 (PF0~PF3)	Input/ output	4-bit I/O port which performs the same functions as port C.
P35~P38 (PI0/AD0~ PI3/AD3)	Input/ output	4-bit I/O port which performs the same functions as port C and doubles as the A.D converter input pin.
P76(V _{FDP})	Input	Load power supply pin which is required when the FDP (fluorescent display tube) output driver incorporates a load resistor.
P21~P28 (T0~T7)	Output	Output pin for the 8 low-order bits of the FDP timing signal.
P13~P20 (T8/S23~ T15/S16)	Output	Output pin for both the segment signal and the 8 high-order bits of the FDP timing signal.
P1~P4 (PG0/S4~ PG3/S7)	Output	Performs both the 4-bit output port and the FDP segment signal output pin functions.
P77~P80 (PH0/S0~ PH3/S3)	Output	Same as port G.
P9~P12 (PJ0/S12~ PJ3/S15)	Output	Same as port G.
P5~P8 (PK0/S8~ PK3/S11)	Output	Same as port G.
P31(TEX)	Input	32 kHz timer clock generator circuit input pin. A 32.768kHz crystal oscillator is to be connected between the TEX and TX pins. When using this pin as the event clock input pin, connect a clock generation source to the TEX pin and leave the TX pin open.
P30(TX)	Output	Clock generator circuit output.
P75(V _{REF})	Input	Reference voltage input for the supply voltage reset circuit. A zener diode should normally be connected to this pin.

TEST POINT LOCATIONS(PCB TOP VIEW)

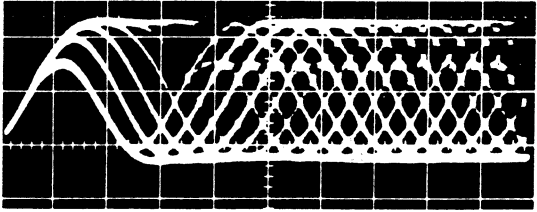
Adjustment Point Equipment Required

Oscilloscope(over 50 MHz)
Frequency Counter
Test Disc PHILIPS 5A
A Regular Compact Disc



CIRCUIT ADJUSTMENT

Focus Offset Adjustment (Figure 1)

Focus Offset Adjustment				
1	See Figure 1	Play the regular disc	VR202	Obtain the maximum amplitude and the biggest diamond windows of the eye pattern.  The above is an example of good eye pattern. The diamond windows in the center portion are large and clear.

Focus Offset Adjustment

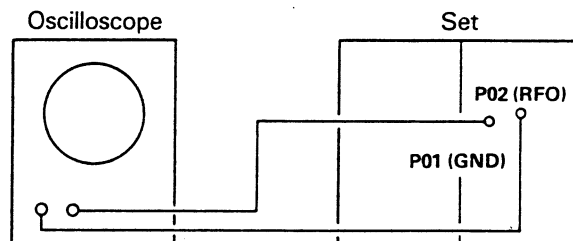
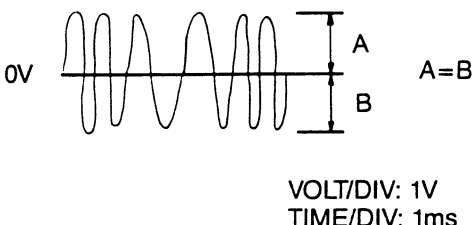


Figure 1

Tracking EF Balance and PLL Adjustment (Figure 2, 3)

Step	Connect	Setting	Adjust	Remarks
Tracking EF Balance Adjustment				
1	See Figure 2	Play the regular disc		 VOLT/DIV: 1V TIME/DIV: 1ms Obtain symmetrical waveform.
2		Push the "▷▷" or "◁◁" key to set to FF or FB mode.	VR201	
3	The above adjustments must be made very carefully as the misadjustment may cause skipping.			
PLL (Phase Locked Loop) Adjustment				
1	See Figure 3	Push power switch on. And set the stop mode.	VR203	Counter reading to be 4.3 MHz.
2	Disconnect between P01 (GND) and P03 (ASY)			
3	Insert the regular disc, and set to normal play mode.			
4	Check the counter reading to be 4.3218 ± 0.0025 MHz.			

EF Balance Adjustment

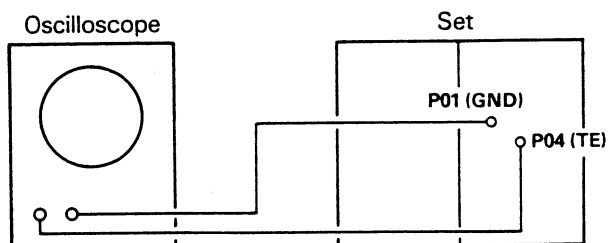


Figure 2

PLL Adjustment

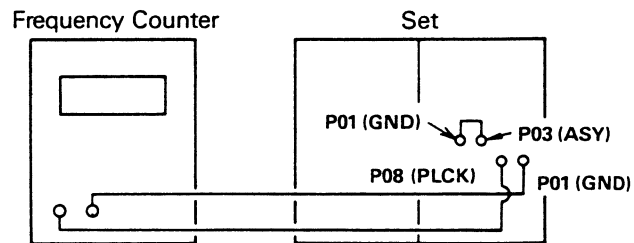
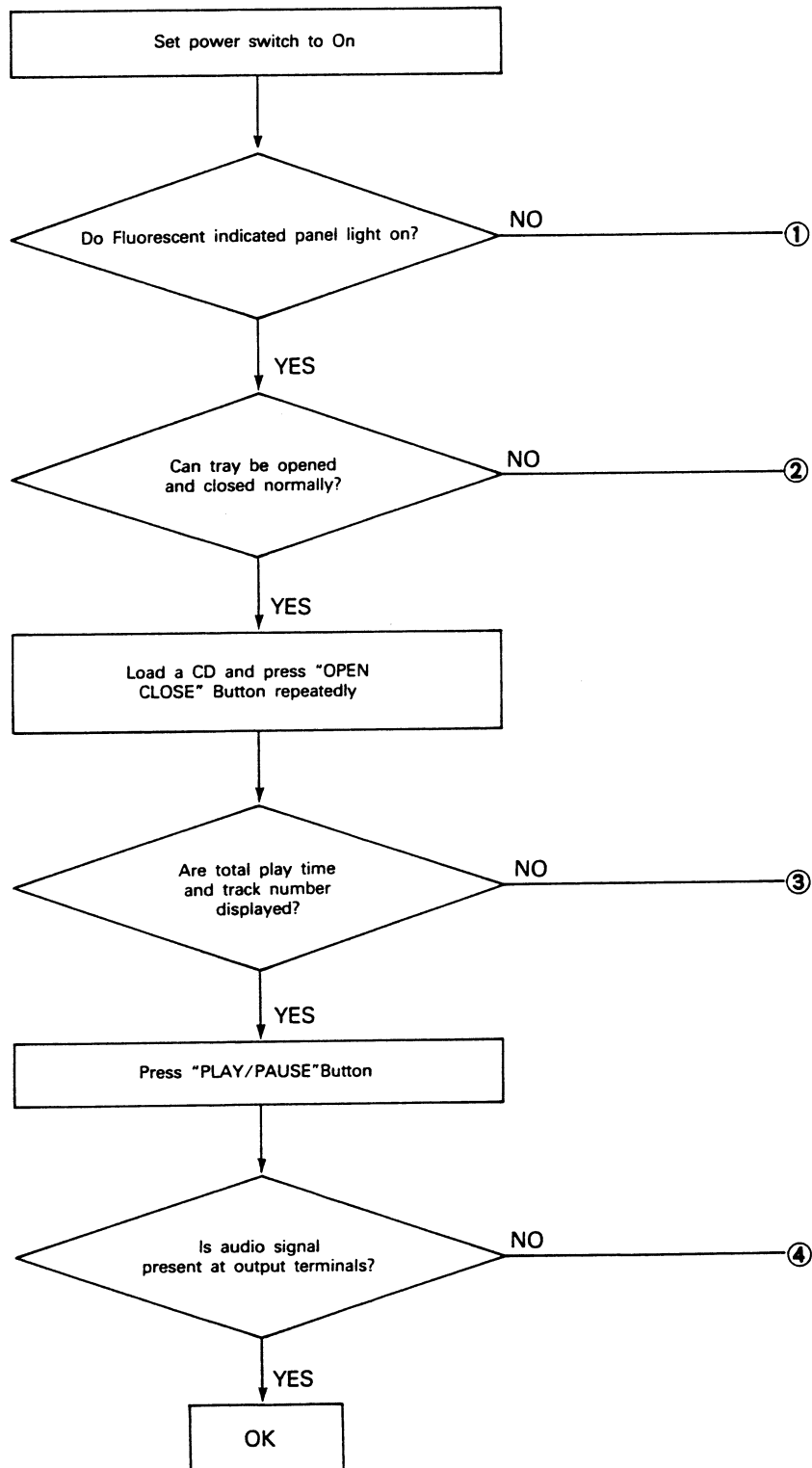


Figure 3

TROUBLESHOOTING



[Repair item 1] At power on, flousscent indicated panel don't light on.

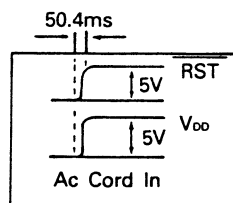
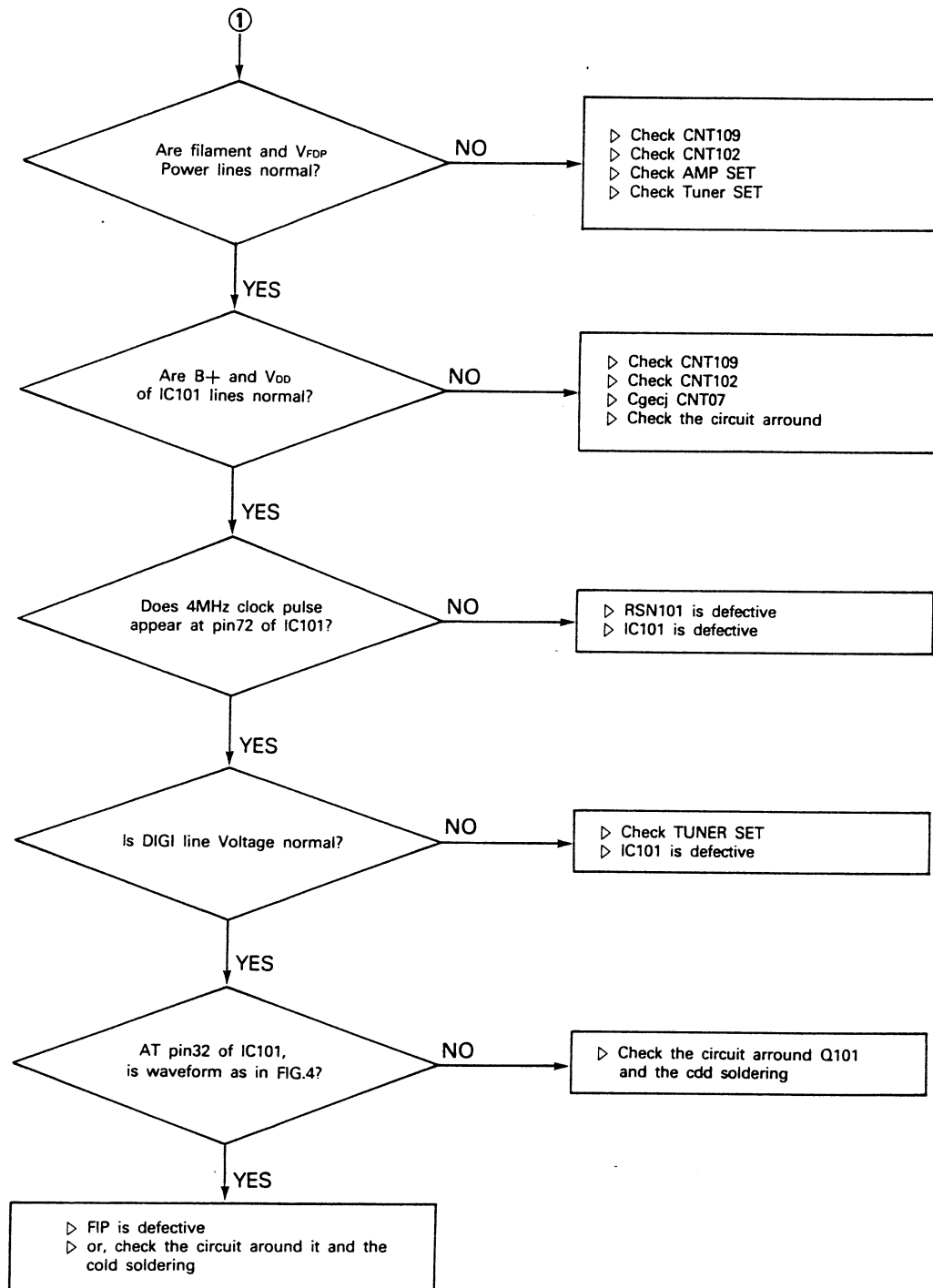
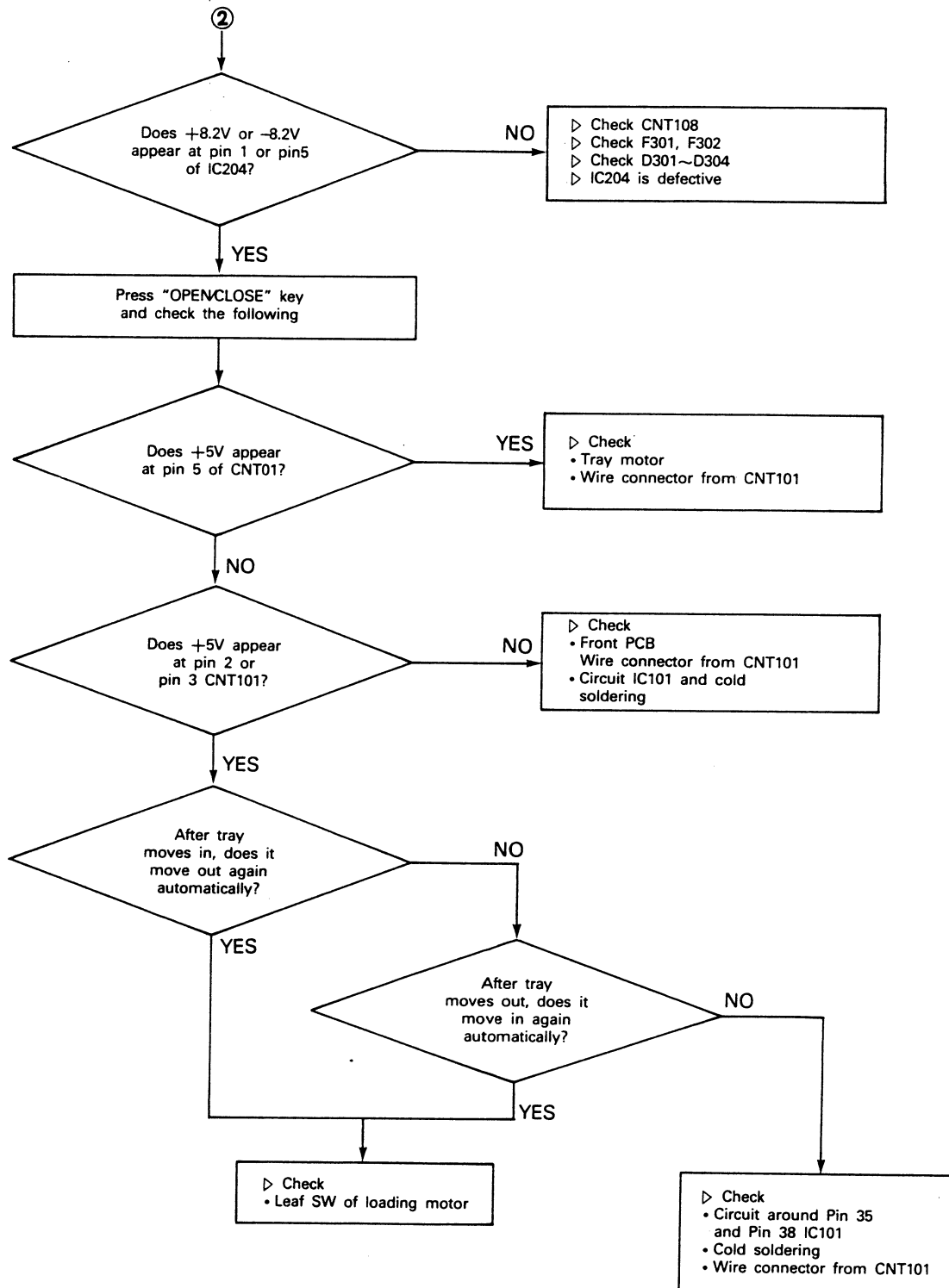
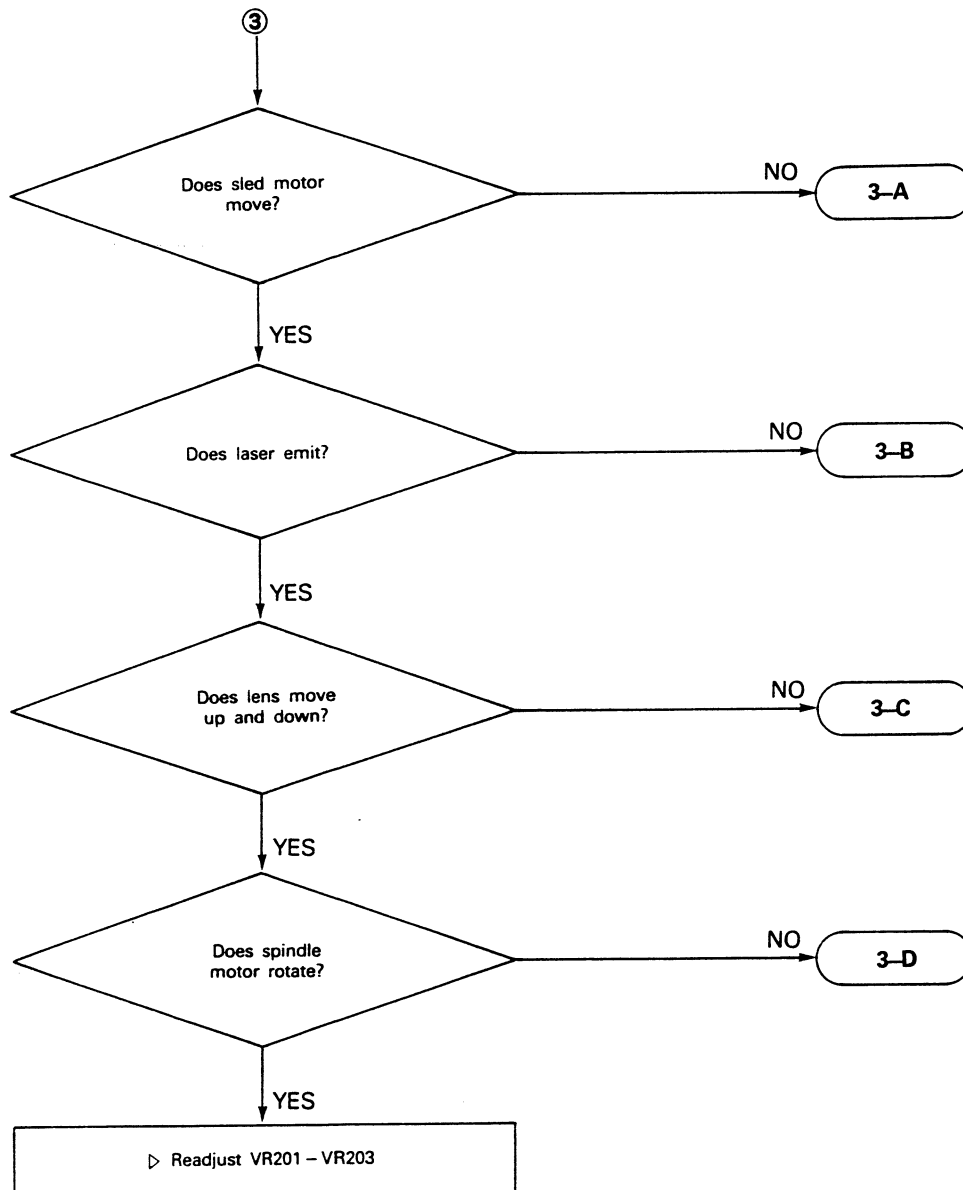


Figure 4

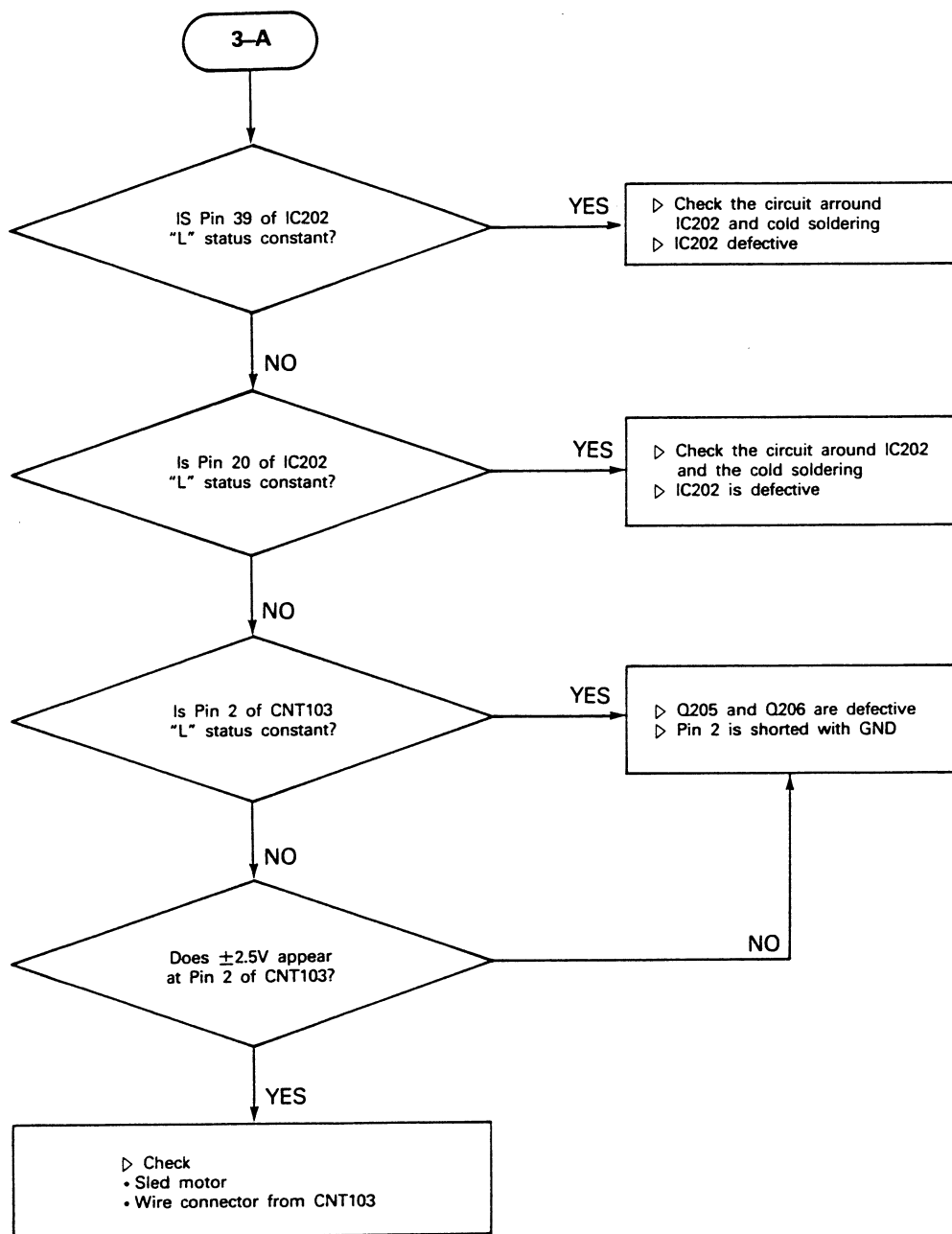
[Repair item 2] Tray cannot be opened and closed by pressing "Open/Close" key.



[Repair item 3] "O" is displayed instead of total play time and track number.



[Repair item 3-A] Sled motor does not move.



[Repair item 3-B] Laser does not emit.

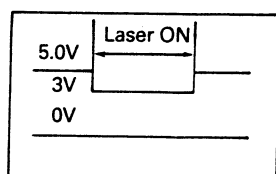
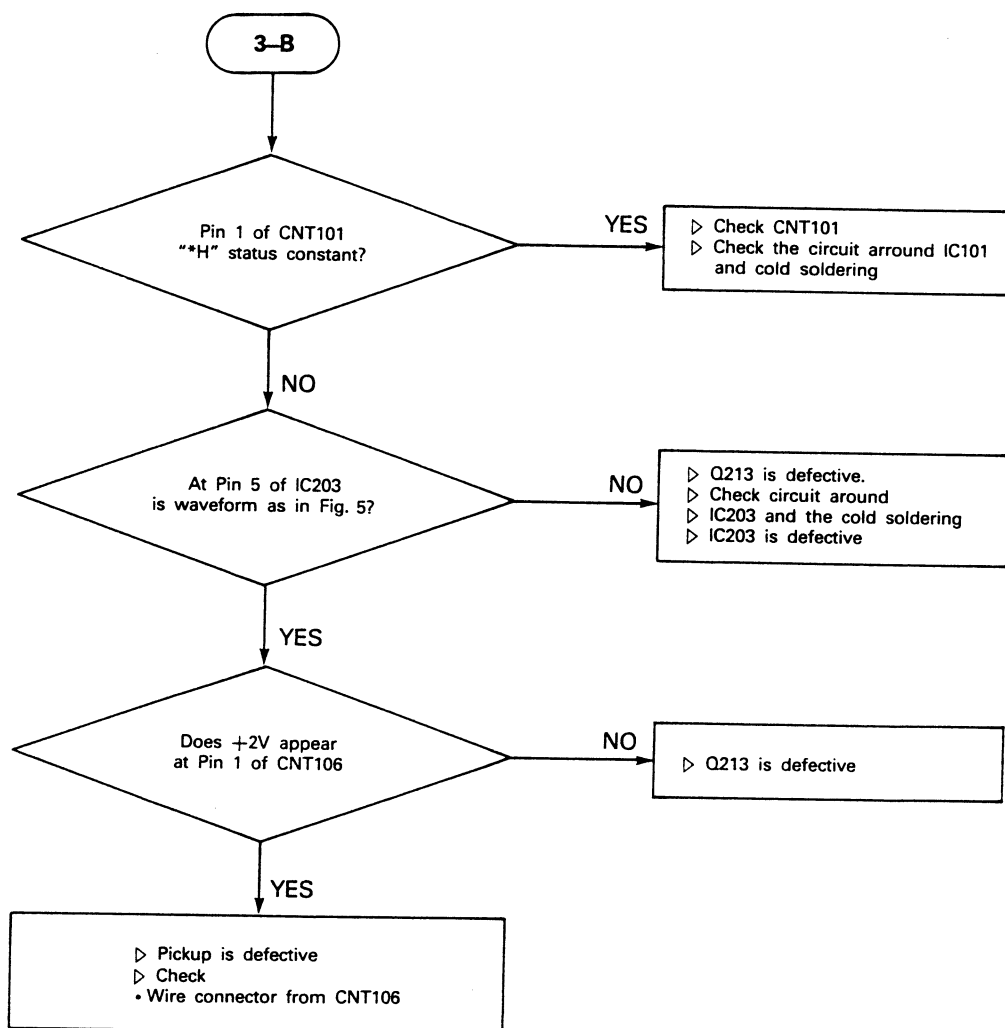
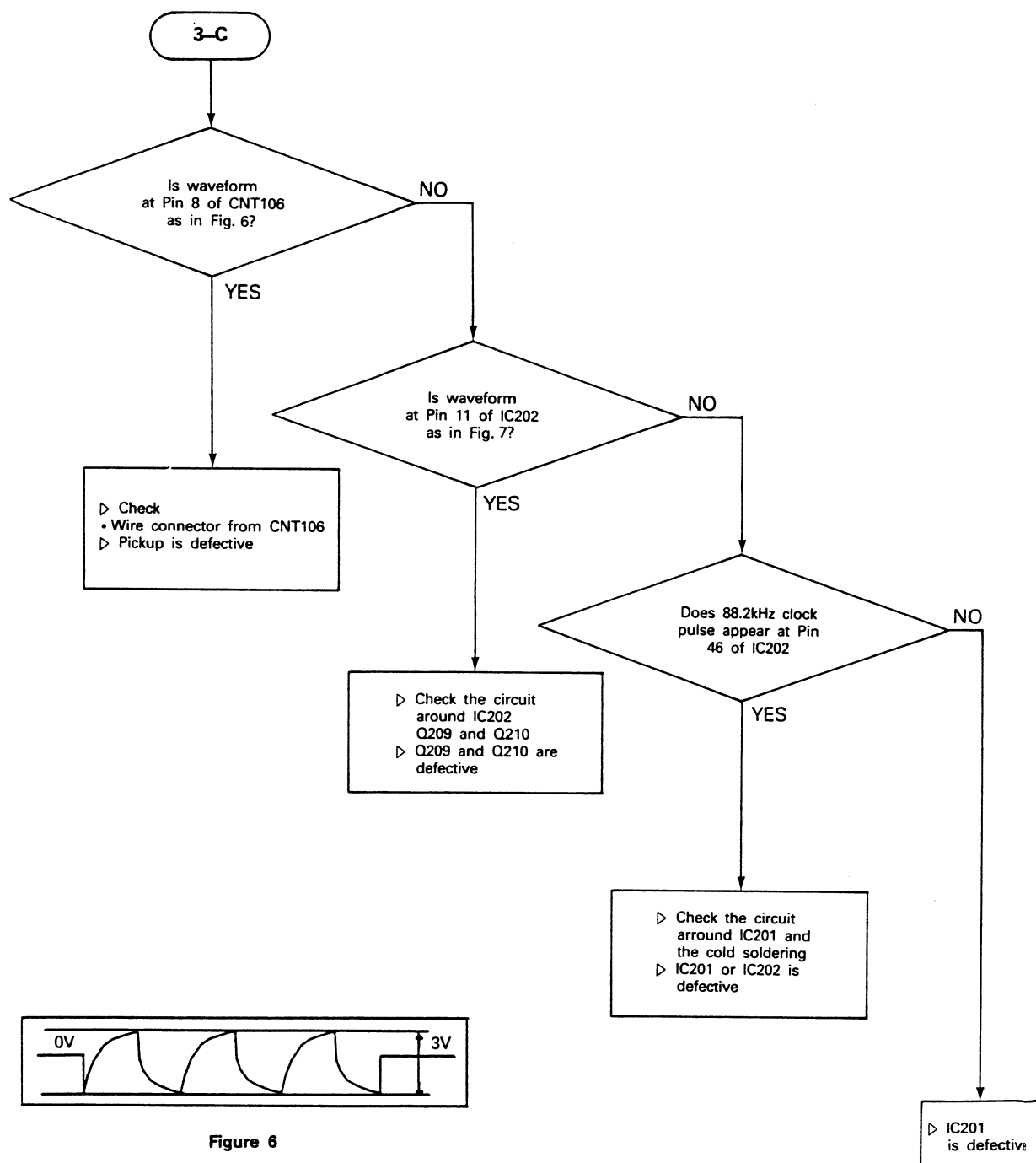


Figure 5

[Repair item 3-C] Object lens of pickup unit does not move up and down.



[Repair item 3-D] Spindle motor does not rotate.

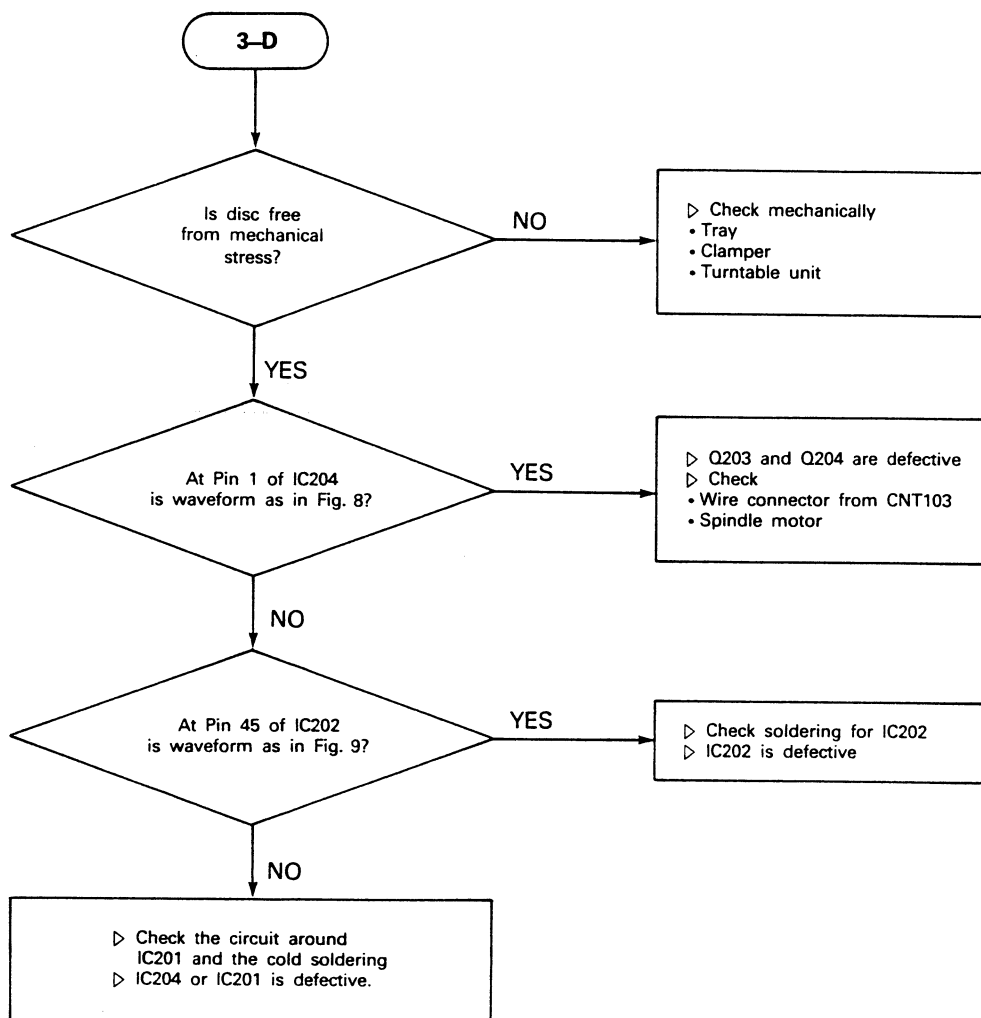


Figure 8

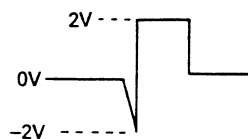
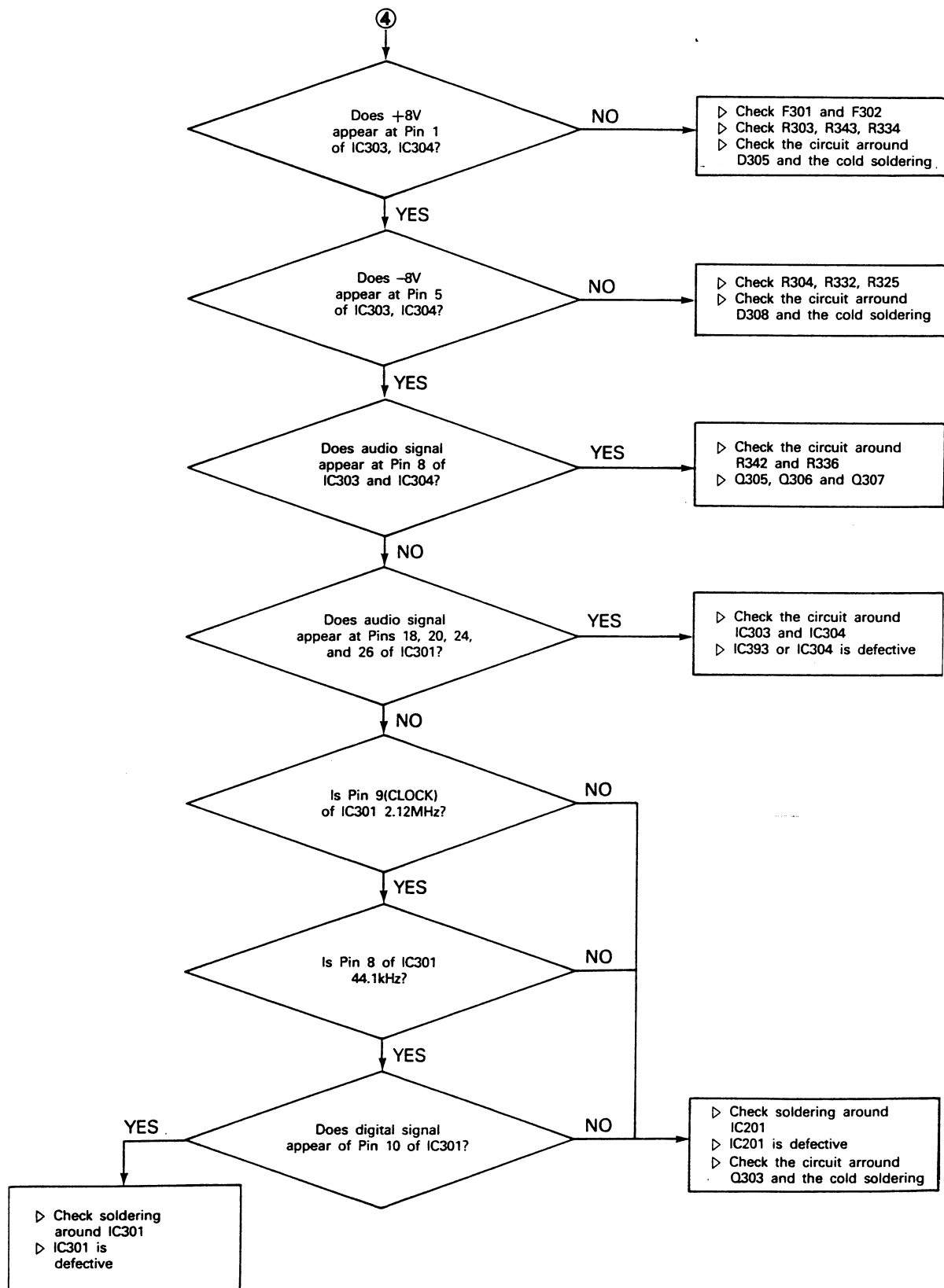


Figure 9

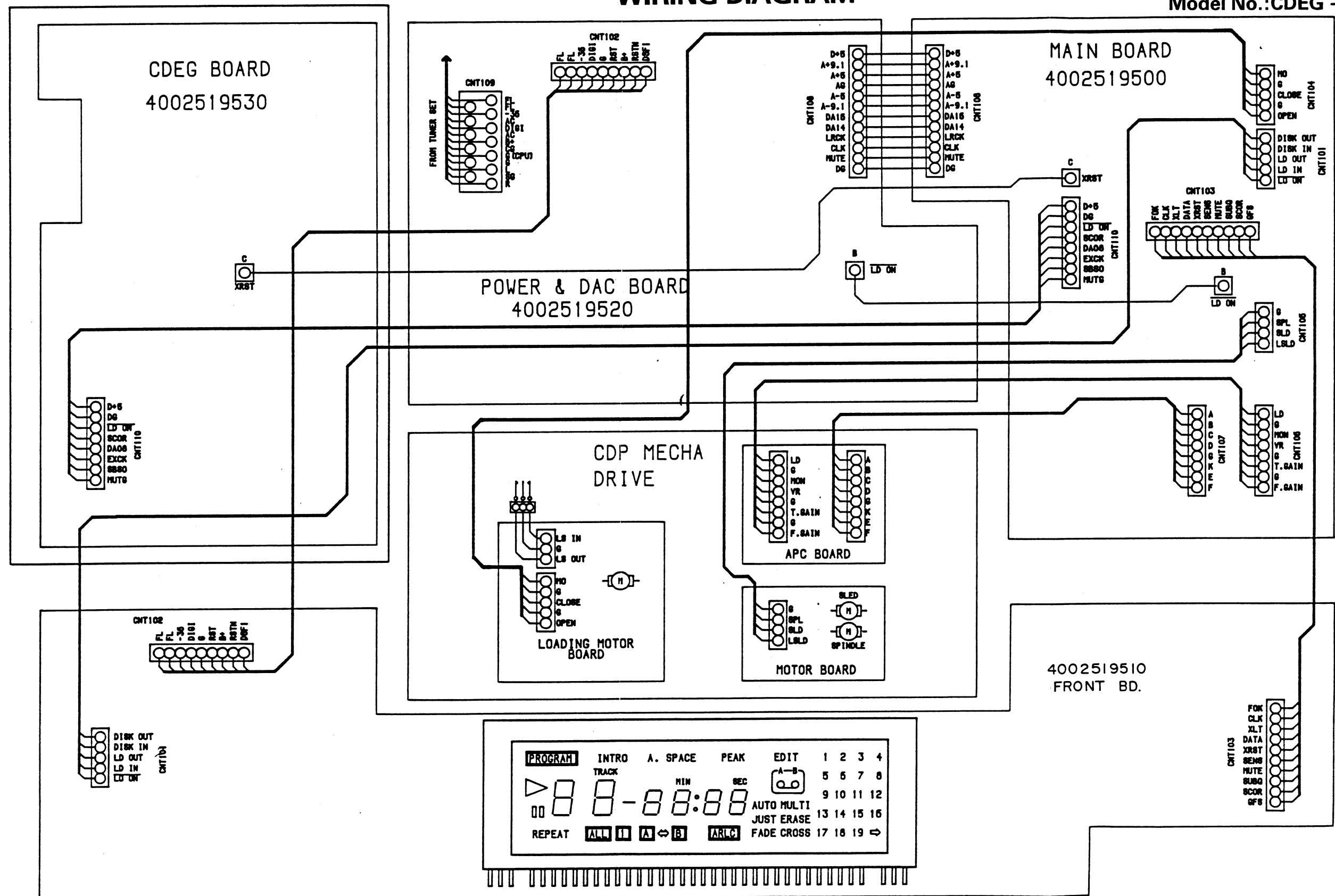
[Repair item 4] No sound signal.



(OPTION BOARD)

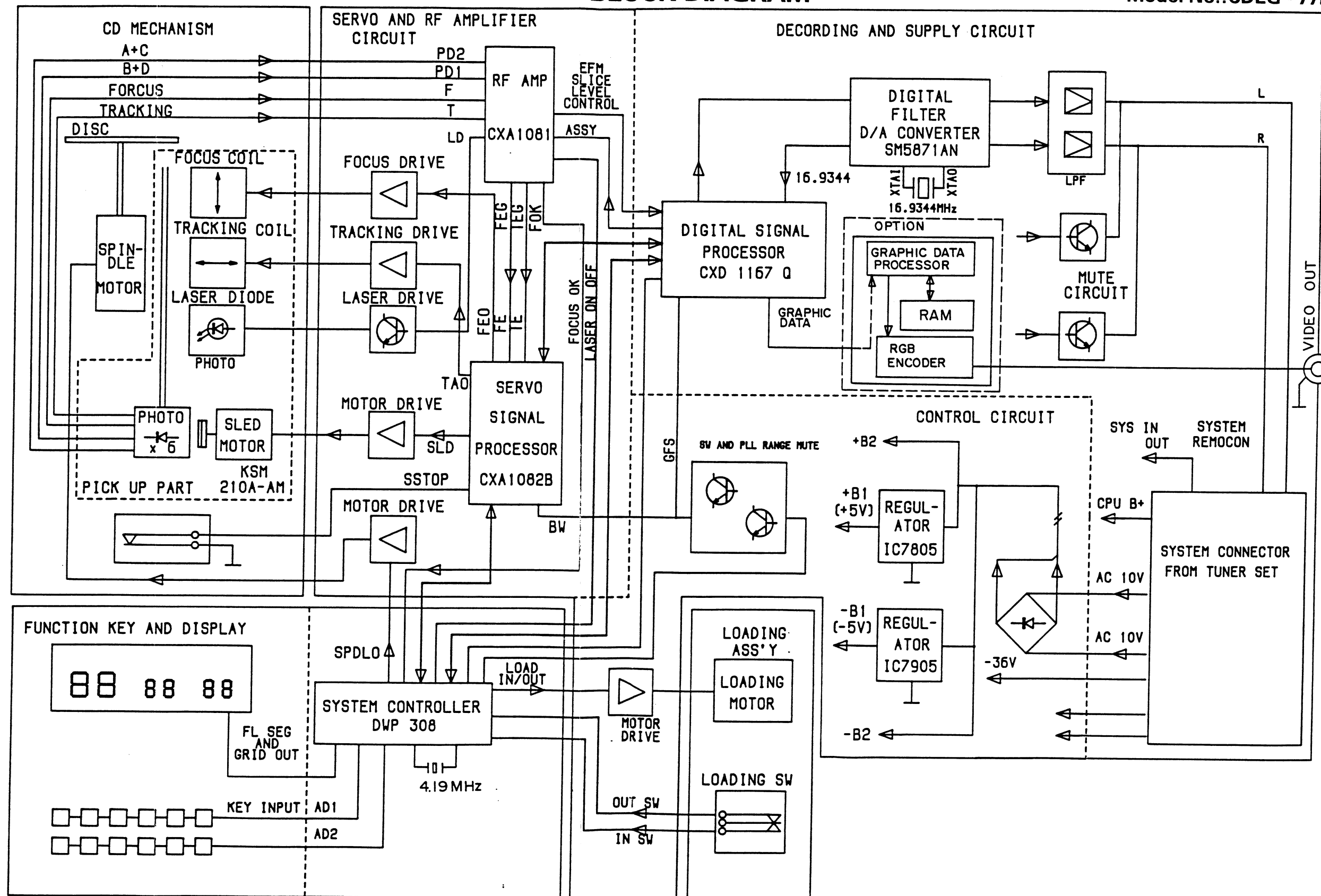
WIRING DIAGRAM

Model No.:CDEG - 77R



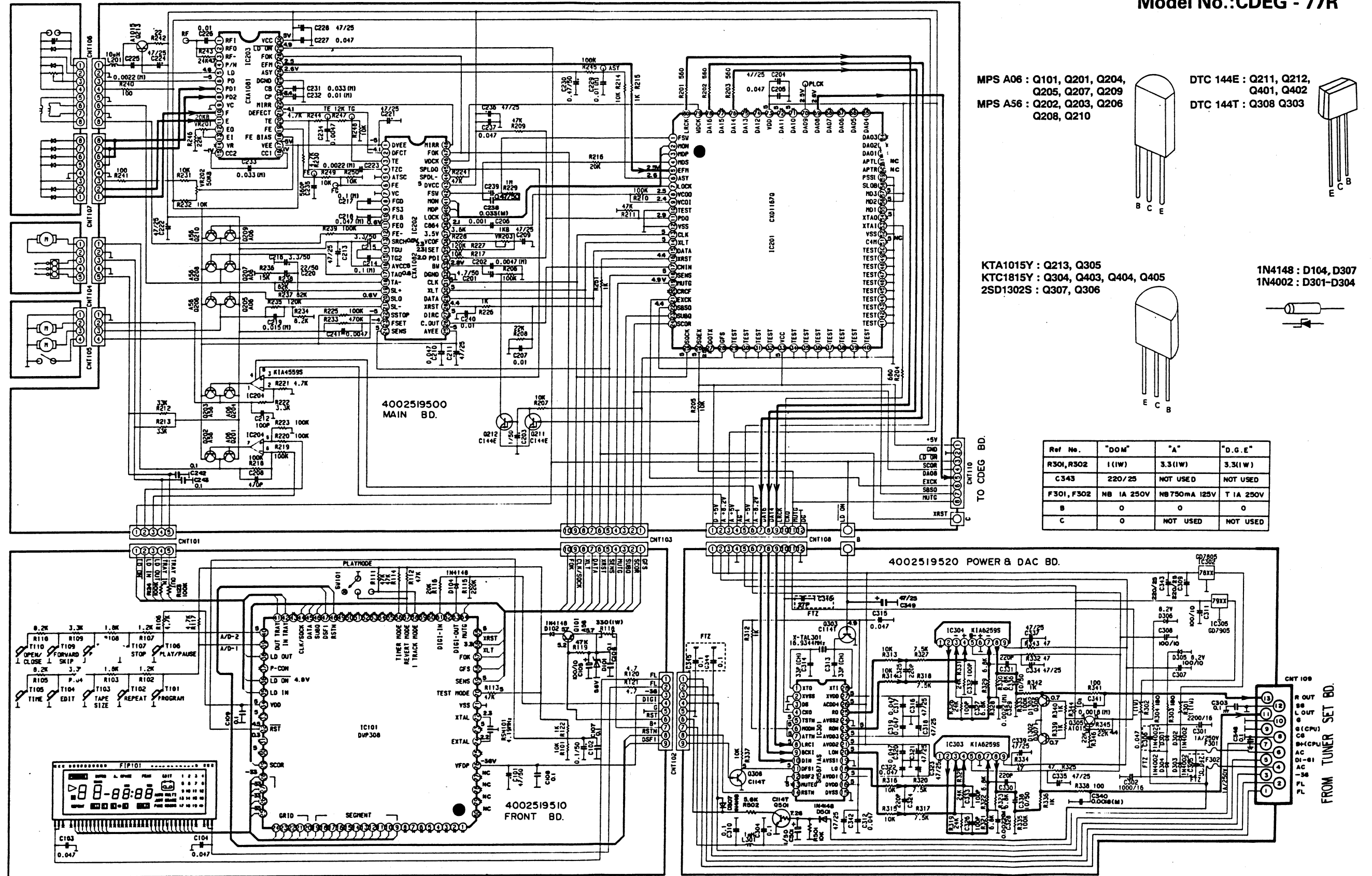
BLOCK DIAGRAM

Model No.:CDEG - 77R



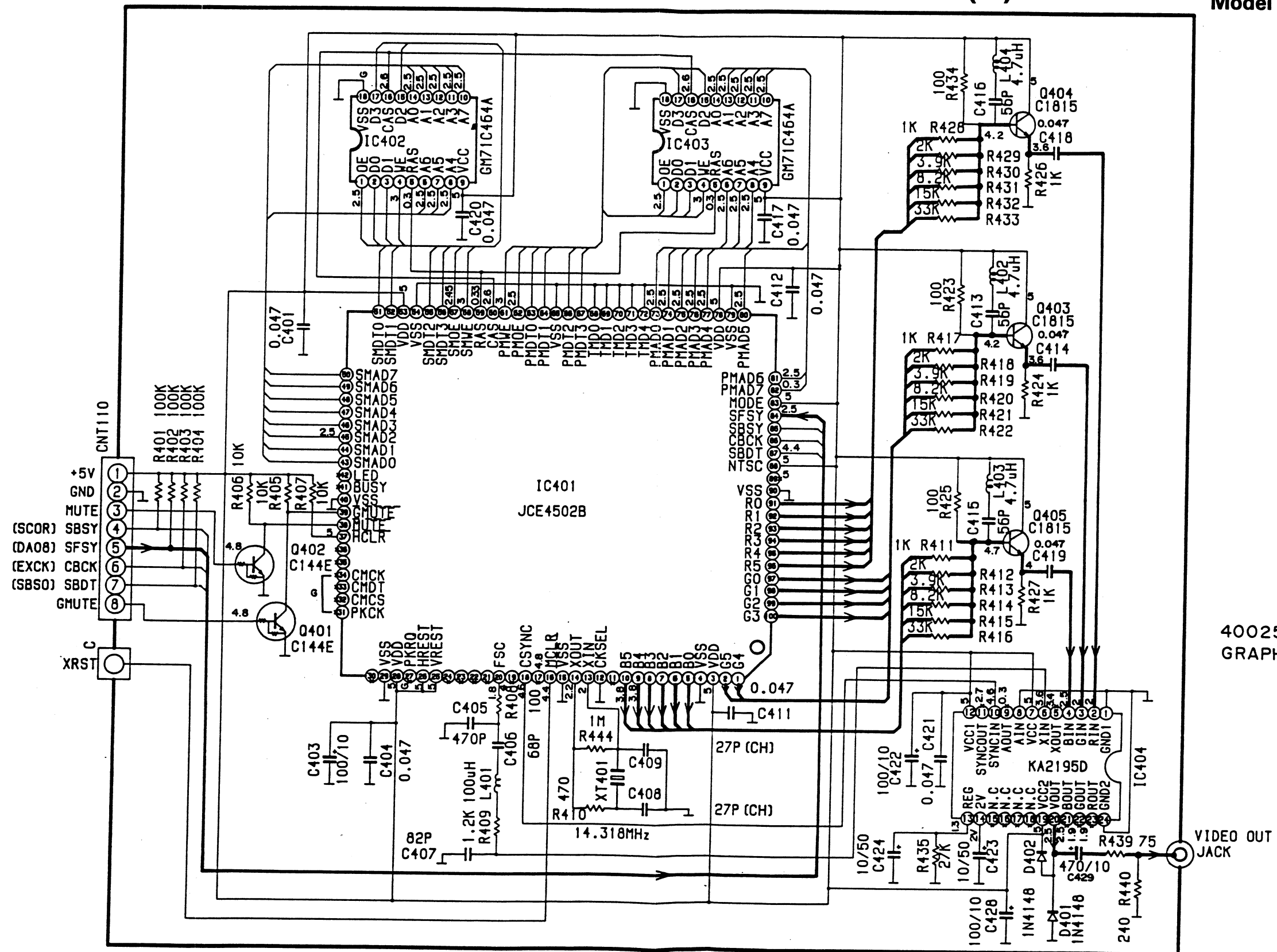
SCHEMATIC DIAGRAM (I)

Model No.: CDEG - 77R



SCHEMATIC DIAGRAM (II)

Model No.:CDEG - 77R



4002519530
GRAPHIC BD.

ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE: Components marked with a $\triangle$ have special characteristics important to safety. If you replace any of these components, read carefully the product safety notice in this manual. Don't degrade the safety of the product through improper servicing. Resistor/Capacitor Tolerance, D:($\pm 0.5\%$), J:($\pm 5\%$), K:(10%), M:($\pm 20\%$), Z:($+80, -20\%$).

Ref. No.	Description	Mfr. Part No.	Remark
	PCB ASSEMBLY - MAIN	054077519500	
Capacitors			
C201	Electric SA 4.7 μ F 50V M	3479247971	
C202	Mylar 0.0047 μ F 100V J	3679472120	
C203	Electric SA 1 μ F 50V M	3479210971	
C204	Electric SG 47 μ F 25V M	3479347041	
C205	Ceramic Tubular 0.047 μ F 50V K	3519473935	
C206	Ceramic Tubular 0.001 μ F 50V K	3519102935	
C207	Ceramic Tubular 0.01 μ F 50V J	3519103935	
C208	Ceramic Tubular 470 pF 50V K	3519471935	
C209	Electric SG 47 μ F 25V M	3479347041	
C210	Ceramic Tubular 0.047 μ F 50V K	3519473935	
C211	Electric SG 47 μ F 25V M	3479347041	
C212	Ceramic Tubular 100 pF 50V K	3519101935	
C213	Electric SG 47 μ F 25V M	3479347041	
C214	Mylar 0.1 μ F 100V J	3679104120	
C215/C216	Electric SA 3.3 μ F 50V M	3479233971	
C217	Mylar 0.1 μ F 100V J	3679104120	
C218	Mylar 0.047 μ F 100V J	3679473120	
C219	Mylar 0.015 μ F 100V J	3679153120	
C220	Electric SA 22 μ F 50V M	3479222071	
C221/C222	Electric SG 47 μ F 25V M	3479347041	
C223	Mylar 0.0022 μ F 100V J	3679222120	
C224	Electric SG 47 μ F 25V M	3479347041	
C225	Mylar 0.0022 μ F 100V J	3679222120	
C226	Ceramic Tubular 0.01 μ F 50V J	3519103935	
C227	Ceramic Tubular 0.047 μ F 50V K	3519473935	
C228	Electric SG 47 μ F 25V M	3479347041	
C229	Mylar 0.01 μ F 100V J	3679103120	
C230	Electric SA 0.47 μ F 50V M	3479247871	
C231	Mylar 0.033 μ F 100V J	3679332120	
C232	Mylar 0.01 μ F 100V J	3679103120	
C233	Mylar 0.033 μ F 100V J	3679332120	
C234	Ceramic Tubular 0.0047 μ F 16V K	3519472915	
C235	Ceramic Tubular 560 pF 50V K	3519561935	
C236	Electric SG 47 μ F 25V M	3479347041	
C237	Ceramic Tubular 0.047 μ F 50V K	3519473935	
C238	Mylar 0.033 μ F 100V J	3679332120	
C239	Electric SA 0.47 μ F 50V M	3479247871	
C240	Ceramic Tubular 0.01 μ F 50V J	3519103935	
C241	Ceramic Tubular 0.0047 μ F 16V K	3519472915	
C242/C243	Ceramic Tubular 0.1 μ F 50V J	3519104935	

*Mylar is a registered trademark of E.I. Du Pont de Nemours and Company.

Ref. No.	Description	Mfr. Part No.	Remark
Coil			
L201	Inductor 10uH	2648001450	
Connectors			
CNT101 CNT103 CNT104 CNT105 CNT106 CNT107 CNT108 CNT110	Plug 5P Straight Type Plug 10P Straight Type Slat Wire Assembly 5P 240mm to Mecha Wire Assembly 4P 140mm to Mecha Wire Assembly 8P 200mm to Mecha Shield Wire Assembly 8P 200mm to Mecha Plug 12P GB200-TS Slat Wire Assembly 8P 300mm to CDEG Board	4428506910 4428516910 436205243332 435504142192 435508202192 435508207752 4428550120 436208303132	Dom
ICs			
IC201 IC202 IC203 IC204	CXD1167Q, DSP CXA1082BS, SSP CXA1081S, RF AMP KIA4559S, OP AMP	2138022110 2138022112 2138022111 2168206103	
Resistors : All resistors are 1/5W carbon film $\pm 5\%$ tolerance, unless otherwise specified. M. O is Metal Oxide type. C is Cement type. M is Metal film type.			
R201-R203 R204 R205 R206 R207 R208 R209 R210 R211 R212/R213 R214 R215 R216 R217 R218-R220 R221 R222 R223 R224 R225 R226 R227	560 ohm 680 ohm 10k ohm 100k ohm 10k ohm 22k ohm 47k ohm 100k ohm 47k ohm 33k ohm 10k ohm 1k ohm 20k ohm 10k ohm 100k ohm 4.7k ohm 3.3k ohm 100k ohm 47k ohm 100k ohm 1k ohm 120k ohm	3069561970 3069681970 3069103970 3069104970 3069103970 3069223970 3069473970 3069104970 3069473970 3069333970 3069103970 3069102970 3069203970 3069103970 3069104970 3069472970 3069332970 3069104970 3069473970 3069104970 3069102970 3069124970	

Ref. No.	Description	Mfr. Part No.	Remark
R228	3.6k ohm	3069362970	
R229	1M ohm	3069105970	
R230	4.7k ohm	3069472970	
R231/R232	10k ohm	3069103970	
R233	470k ohm	3069474970	
R234	8.2k ohm	3069822970	
R235	120k ohm	3069124970	
R236	15k ohm	3069153970	
R237/R238	82k ohm	3069823970	
R239	100k ohm	3069104970	
R240/R241	100 ohm	3069101970	
R242	22 ohm	3069220970	
R243	24k ohm	3069243970	
R244	4.7k ohm	3069472970	
R245	100k ohm	3069104970	
R246	22k ohm	3069223970	
R247	12k ohm	3069123970	
R248-R250	10k ohm	3069103970	
R251	1k ohm	3069102970	
Variable Resistor - Semifixed			
VR201	20k ohm, Vertical	3248020353	
VR202	50k ohm, Vertical	3248050353	
VR203	1k ohm, Vertical	3048010253	
Transistors			
Q201	MPSA06. Loading Motor Drive, Silicon, NPN	2208606114	
Q202	MPSA56. Loading Motor Drive, Silicon, PNP	2208606113	
Q203	MPSA56. Spindle Motor Drive, Silicon, PNP	2208606113	
Q204	MPSA06. Spindle Motor Drive, Silicon, NPN	2208606114	
Q205	MPSA06. Sled Motor Drive, Silicon, NPN	2208606114	
Q206	MPSA56. Sled Motor Drive, Silicon, PNP	2208606113	
Q207	MPSA06. Actuator Drive, Silicon, NPN	2208606114	
Q208	MPSA56. Actuator Drive, Silicon, PNP	2208606113	
Q209	MPSA06. Actuator Drive, Silicon, PNP	2208606114	
Q210	MPSA56. Actuator Drive, Silicon, NPN	2208606113	
Q211/Q212	DTC144E. Switching, Silicon, PNP	2208622109	
Q213	KTA1015Y Switching, Silicon, PNP	2208206105	
Other			
•	PCB - Main	4002519500	

Ref. No.	Description	Mfr. Part No.	Remark
	PCB ASSEMBLY - FRONT	054077519510	
Capacitors			
C101	Electric SG 47 μ F 50V M	3479347071	
C102	Electric SG 0.1 μ F 50V M	3479210871	
C103/C104	Ceramic Tubular 0.047 μ F 50V K	3519473935	
C105	Electric SG 100 μ F 10V M	3479310121	
C106-C109	Ceramic Tubular 0.1 μ F 50V J	3519104935	
Connectors			
CNT101	Slat Wire Assembly 5P 400mm to Main Board	436205403332	
CNT102	Slat Wire Assembly 9P 300mm to DAC & Power Board	436209303332	
CNT103	Slat Wire Assembly 10P 200mm to Main Board	436210203332	
Diodes			
D101	Zener, 5.6V	2258599104	
D102-D104	1N4148, Switching	2058306101	
IC			
IC101	DWP308(CXP50112), Main Control CPU	2138322144	
Resistors			
R101	10k ohm	3069103970	
R102	1.2k ohm	3069122970	
R103	1.8k ohm	3069182970	
R104	3.3k ohm	3069332970	
R105	8.2k ohm	3069822970	
R106	4.7k ohm	3069472970	
R107	1.2k ohm	3069122970	
R108	1.8k ohm	3069182970	
R109	3.3k ohm	3069332970	
R110	8.2k ohm	3069822970	
R111-R114	47k ohm	3069473970	
R115	220k ohm	3069224970	
R116	20 k ohm	3069203970	
R117	4.7k ohm	3069472970	
R118	330 ohm M., 1W J	3029331470	
R119	1.2k ohm	3069122970	
R120/R121	4.7 ohm	3069479970	
R122	1k ohm	3069102970	
R123/R124	100k ohm	3069104970	

Ref. No.	Description	Mfr. Part No.	Remark
Transistor			
Q101	MPS A56, Switching, Silicon, PNP	2208606113	
Others			
FP101 RSN101 •	FL, FIP10BYM8 4.19MHz, Resonator PCB - Front	2328130929 3938101880 4002519510	

		PCB ASSEMBLY - POWER & DAC				054077519520			
Capacitors									
C301	Electric SG	2200 μ F	16V	M		3409322239			
C302	Electric SG	1000 μ F	16V	M		3409310239			
C303/C304	Ceramic Tubular	0.1 μ F	50V	K		3519104935			
C305/C306	Ceramic Tubular	0.047 μ F	50V	K		3519473935			
C307/C308	Electric SG	100 μ F	10V	M		3479310121			
C309	Electric SG	220 μ F	25V	M		3409322149			
C310	Ceramic Tubular	0.1 μ F	50V	K		3519104935			
C311	Electric SG	220 μ F	25V	M		3409322149			
C312	Ceramic Tubular	0.047 μ F	50V	K		3519473935			
C313/C314	Ceramic CH	33 pF	50V	J		3529330210			
C315	Ceramic Tubular	0.047 μ F	50V	K		3519473935			
C316	Electric SG	47 μ F	25V	M		3479347041			
C317	Ceramic Tubular	0.047 μ F	50V	K		3519473935			
C318	Electric SG	47 μ F	25V	M		3479347041			
C319/C320	Ceramic Tubular	0.047 μ F	50V	K		3519473935			
C321	Electric SG	47 μ F	25V	M		3479347041			
C322	Ceramic Tubular	0.047 μ F	50V	K		3519473935			
C323	Electric SG	47 μ F	25V	M		3479347041			
C324/C325	Ceramic Tubular	220 pF	50V	K		3519221935			
C326/C327	Ceramic Tubular	100 pF	50V	K		3519101935			
C328/C329	Mylar	0.0022 μ F	100V	J		3679222120			
C330/C331	Ceramic Tubular	220 pF	50V	K		3519221935			
C332/C333	Ceramic Tubular	100 pF	50V	K		3519101935			
C334/C335	Electric SG	47 μ F	25V	M		3479347041			
C336	Electric SA	10 μ F	50V	M		3479210071			
C337	Electric SG	47 μ F	25V	M		3479347041			
C338	Electric SA	10 μ F	50V	M		3479210071			
C339	Electric SG	47 μ F	25V	M		3479347041			
C340/C341	Mylar	0.0018 μ F	100V	J		3679182120			
C342	Electric SG	47 μ F	25V	M		3479347041			
C343	Electric SG	470 μ F	10V	M		3479347121			
C344/C345	Ceramic Tubular	0.1 μ F	50V	K		3519104935	D., FTZ		
C346	Ceramic Tubular	27 pF	50V	J		3519270935	D., FTZ		

Ref. No.	Description	Mfr. Part No. ,	Remark
C347/C348 C349 C501	Ceramic Tubular 0.1 μ F 50V J Electric SG 47 μ F 25V M Electric SA 1 μ F 50V M	3519104935 3479347041 3479210971	
Coil			
L301	Inductor 1mH, Axial	2648610284	
Connectors			
CNT102 CNT108 CNT109	Plug 9P Straight Type Plug 12P GB-200 LS Wire Trap 13P System Connector Assembly 13P	4428516810 4428550120 4428525340 4358613501	
Diodes			
D301-D304 D305/D306 D307 D501	1N4002 Zener, 8.2V 1N4148 1N4148	2258100135 2258599123 2058306101 2058306101	
Fuses			
F301/F302 F301/F302 F301/F302	NB 1A 250V NB 750mA 125V UL/CSA T 1A 250V	5508202030 5508201821 5508302035	Dom A D, G, E
ICs			
IC301 IC302 IC303/IC304 IC305	SM5871A, DAC GD7805 +5V, Regulator KIA6259S, OP AMP, Filter & Butter GD7905 -5V, Regulator	2138099120 2168601101 2168206106 2168600105	
Resistors			
R301/R302 R301/R302 R303/R304 R305-R311 R305/R312 R313-R316 R317/R318	1 ohm M., 1W J 3.3 ohm M., 1W J 180 ohm Not used 1k ohm 10k ohm 7.5k ohm	3029109470 3029339470 3069181970 . 3069102970 3069103970 3069752970	Dom

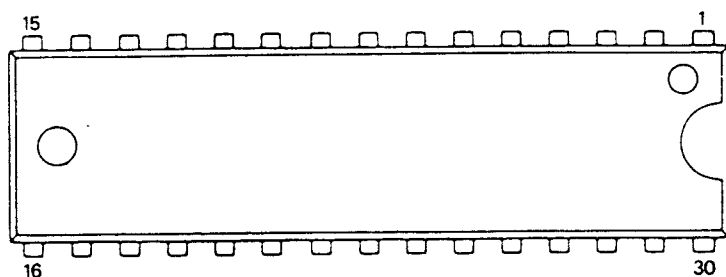
Ref. No.	Description	Mfr. Part No.	Remark
R319	24k ohm	3069243970	
R320	7.5k ohm	3069752970	
R321-R323	6.8k ohm	3069682970	
R324	24k ohm	3069243970	
R325	47 ohm	3069470970	
R326	24k ohm	3069243970	
R327	7.5k ohm	3069752970	
R328-R330	6.8k ohm	3069682970	
R319/R331	24k ohm	3069243970	
R332	47 ohm	3069470970	
R333	100 ohm	3069104970	
R334	47 ohm	3069470970	
R335	100k ohm	3069104970	
R336	1k ohm	3068102970	
R337	10k ohm	3069103970	
R338	100 ohm	3069101970	
R339/R340	1k ohm	3069102970	
R341	100 ohm	3069101970	
R342	1k ohm	3068102970	
R343	47 ohm	3069470970	
R344	10k ohm	3069103970	
R345/R346	22k ohm	3069223970	
R501	10k ohm	3069103970	
R502	5.6k ohm	3069562970	
Transistors			
Q303	DTC114TS, Switching, Silicon, NPN	2208622104	
Q305	KTA1015Y, Switching, Silicon, PNP	2208206105	
Q306/Q307	KTD1302S, Mute, Silicon, NPN	2208606112	
Q308	DTC114TS, Switching, Silicon, NPN	2208622104	
Q501	DTC114TS, Switching, Silicon, NPN	2208622104	
X-TAL			
X-TAL301	16.9344MHz, Crystal	3938101500	
Others			
•	Fuse Clip	4255001010	
•	Label NB 1A 250V	9057078593	Dom
•	Label NB 750mA 125V	9057078477	A
•	PCB-POWER & DAC	4002519520	

Ref. No.	Description	Mfr. Part No.	Remark
	PCB ASSEMBLY - CDEG	054077519530	Dom. Only
Capacitors			
C401	Ceramic Tubular type 0.047 μ F 50V K	3519473935	
C402	Not used	.	
C403	Electric SG 100 μ F 10V M	3479310121	
C404	Ceramic Tubular type 0.047 μ F 50V K	3519473935	
C405	Ceramic Tubular type 470 pF 50V K	3519471936	
C406	Ceramic Tubular type 68 pF 50V J	3519680935	
C407	Ceramic Tubular type 82 pF 50V K	3519820935	
C408/C409	Ceramic CH 27 pF 50V J	3529220210	
C410	Not used	.	
C411/C412	Ceramic Tubular type 0.047 μ F 50V K	3519473935	
C413	Ceramic Tubular type 56 pF 50V J	3519560935	
C414	Ceramic Tubular type 0.047 μ F 50V K	3519473935	
C415/C416	Ceramic Tubular type 56 pF 50V J	3519560935	
C417	Ceramic Tubular type 0.047 μ F 50V K	3519473935	
C418-C421	Ceramic Tubular type 0.047 μ F 50V K	3519473935	
C422	Electric SG 100 μ F 10V M	3479310121	
C423/C424	Electric SA 10 μ F 50V M	3479210071	
C425-C427	Not used	.	
C428	Electric SG 100 μ F 10V M	3479310121	
C429	Electric SG 470 μ F 10V M	3479347121	
C430	Ceramic Tubular type 0.047 μ F 50V K	3519473935	
Coils			
L401	Inductor 100uH	2648610082	
L402-L404	Inductor 4.7uH	2648647982	
Connector			
CNT110	Plug 8P Straight Type	4428516710	
Diodes			
D401/D402	1N4148, Switching	2058306101	
ICs			
IC401	JCE4502B, Graphic Data Processor	2138000190	
IC402/IC403	GM71C464A, Random Access Memory	2138401160	
IC404	KA2195D, RGB Encoder	2168502100	

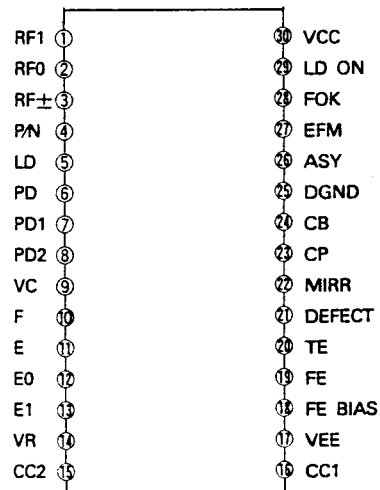
Ref. No.	Description	Mfr. Part No.	Remark
Resistors			
R401-R404	100k ohm	3069104970	
R405-R407	10k ohm	3069103970	
R408	100 ohm	3069101970	
R409	1.2k ohm	3069122970	
R410	470 ohm	3069471970	
R411	1k ohm	3069102970	
R412	2k ohm	3069202970	
R413	3.9k ohm	3069392970	
R414	8.2k ohm	3069822970	
R415	15k ohm	3069153970	
R416	33k ohm	3069333970	
R417	1k ohm	3069102970	
R418	2k ohm	3069202970	
R419	3.9k ohm	3069392970	
R420	8.2k ohm	3069822970	
R421	15k ohm	3069153970	
R422	33k ohm	3069333970	
R423	100 ohm	3069101970	
R424	1k ohm	3069102970	
R425	100 ohm	3069101970	
R426-R428	1k ohm	3069102970	
R429	2k ohm	3069202970	
R430	3.9k ohm	3069392970	
R431	8.2k ohm	3069822970	
R432	15k ohm	3069153970	
R433	33k ohm	3069333970	
R434	100 ohm	3069101970	
R435	27k ohm	3069273970	
R436-R438	Not used	.	
R439	75 ohm	3069750970	
R440	240 ohm	3069241970	
R441-R443	Not used	.	
R444	1M ohm	3069105970	
Transistors			
Q401/Q402	DTC144E, Switching, Silicon, NPN	2208622109	
Q403-Q405	KTC1815Y, Graphic Data Switching, Silicon, NPN	2208606104	
X-TAL			
XT401	14.318MHz, Crystal	3938201950	
Other			
.	PCB - CDEG	4002519530	

IC LEAD IDENTIFICATION & INTERNAL CIRCUITRY

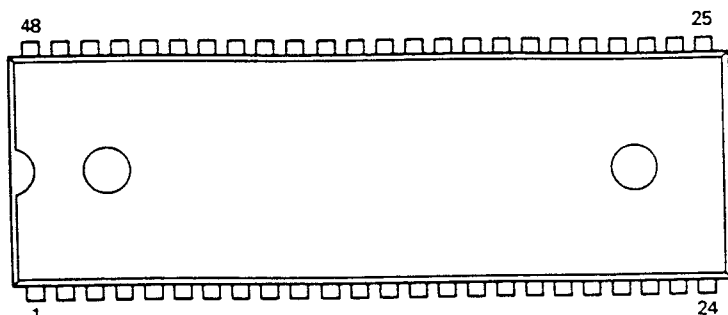
IC203 : CXA1081BS



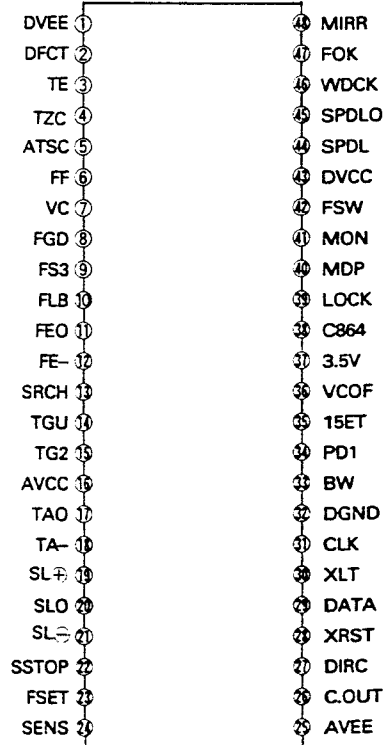
RF Amp.



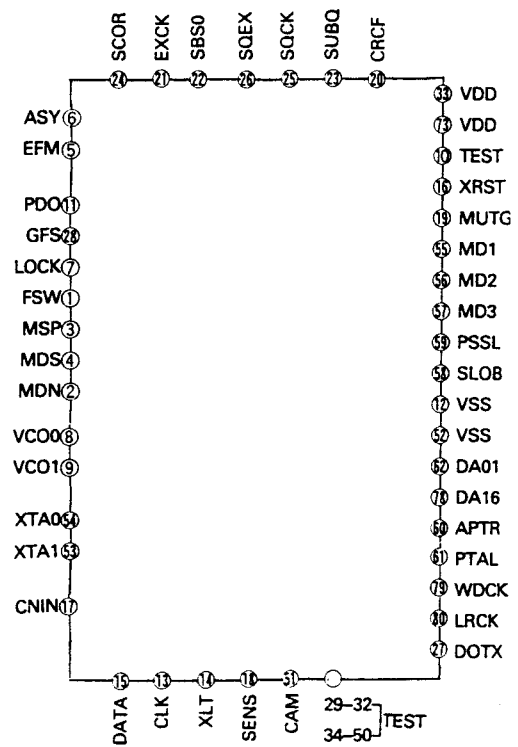
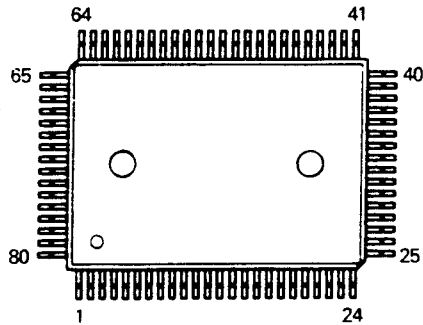
IC202 : CXA1082BS



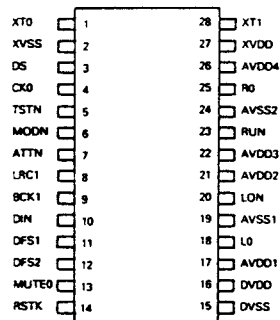
Servo Signal Processor



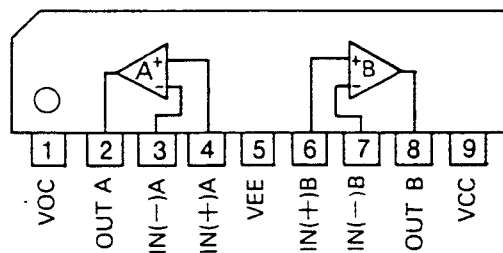
IC201 : CXD1167Q



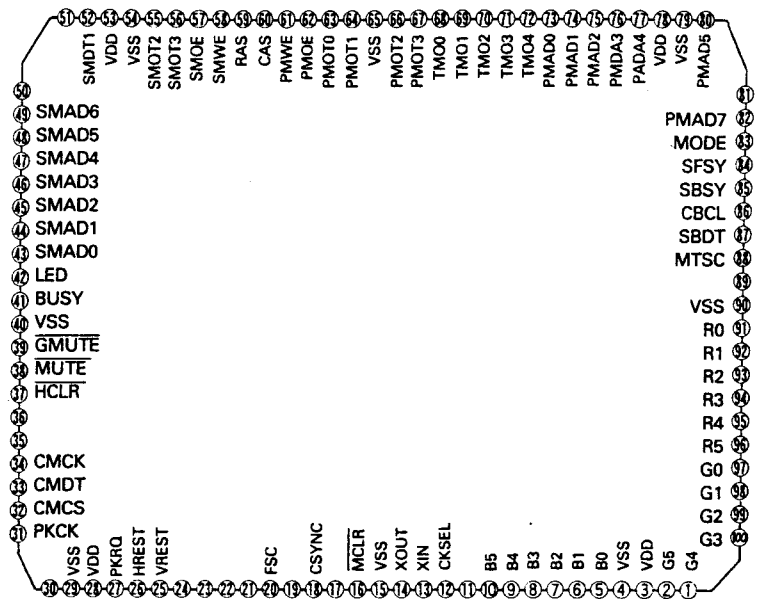
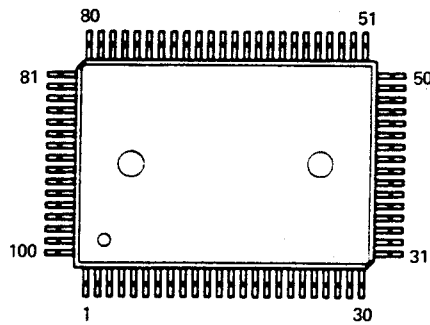
IC301 : SM5871AS



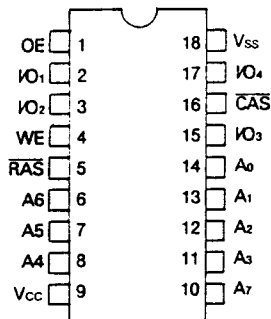
KIA6259S : IC303, IC304
KIA4559S : IC204



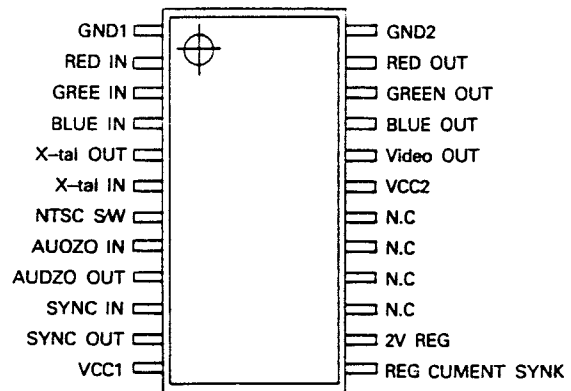
IC401 : JCE4502



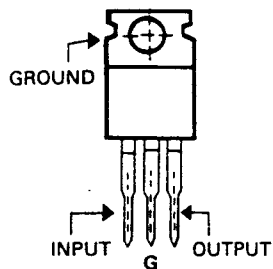
IC402,IC403 : GM71C464A



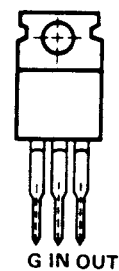
IC404 : KA2195D



IC302 : GD7805



IC305 : GD7905



SEMICONDUCTOR VOLTAGE CHART

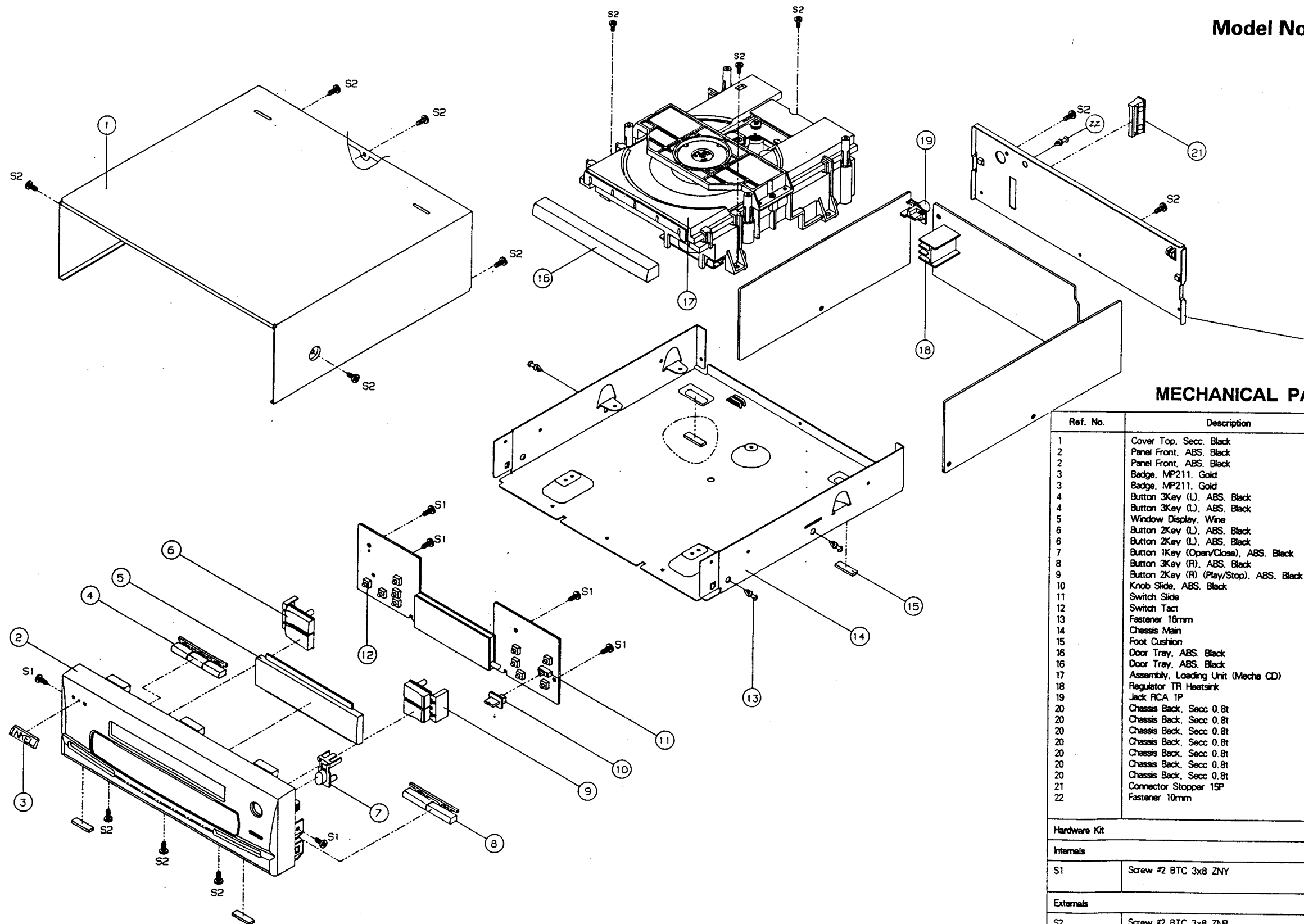
Ref. No		Normal mode	Ref. No		Normal mode
IC 101	1-8	-	IC 201	8	2.5V
	9/10	-26V		9	2.4V
	11	-13V		10	0V
	12/13	-17V		11	2.9V
	14	-26V		12	0V
	15	-17V		13/14	5V
	16-19	-35V		15	0V
	20-28	-33V		16	4.4V
	29	0V		17	0V
	310/31	-		18	5V
	32	4.5V		19	4.9V
	33	-		20/21	0V
	34	5V		22	4.4V
	35	0V		23/24	0V
	36	4.8V		25/26	5V
	37	-		27	2.5V
	38/39	0V		28/32	0V
	40/41	5V		33	5V
	42	0V		34-50	0V
	43	-		51	5V
	44	5V		52/53	0V
	45-48	0V		54	5V
	49-55	-		55	0V
	56/57	5V		56/57	5V
	58	0V		58/59	0V
	59/60	-		60/68	-
	61	0V		69	2.6V
	62	-		70	2.5V
	63	0V		71/72	5V
	64-66	5V		73	5V
	67/68	0V		74/75	-
	69/70	5V		76	0V
	71	0V		77	-
	72	2.3V		78/79	0
	73	-		80	5V
	74	2.2V	IC 202	1	-5V
	75	-		2	-4.1V
	76	-36V		3-10	0V
	77-80	-		11	0.6V
IC 201	1-4	0V		12	0V
	5	2.5V		13	0.5V
	6	2.6V		14/15	0V
	7	0V		16	5V

Ref. No		Normal mode
IC 202	17	0.6V
	18/19	0V
	20	0.6V
	21	0V
	22	-5V
	23	-4V
	24	5V
	25	-5V
	26	0V
	27	5V
	28	4.4V
	29	0V
	30/31	5V
	32	0V
	33/34	2.8V
	35/36	2.3V
	37	3.5V
	38	2.1V
	39-42	0V
	43	5V
	44-48	0V
IC 203	1-3	0V
	4	4.7V
	5	4.6V
	6	-5V
	7-14	0V
	15	-1V
	16	1V
	17	-5V
	18-20	0V
	21	-4.1V
	22	0V
	23	-3.4V
	24/25	0V
	26	2.6V
	27	2.5V
	28	0V
	29	4.9V
	30	5V
IC 301	1-4	0V
	5-7	5V
	8-10	5V or 0V
	11	5V
	12	0V
	13	5V
Ref. No		Normal mode
IC 301	14/15	0V
	16/17	5V
	18	5V or 0V
	19	0V
	20	5V or 0V
	21/22	5V
	23	5V or 0V
	24	0V
	25	5V or 0V
	26/27	5V
	28	0V
IC 401	1/2	0V
	3	5V
	4-8	0V
	9/10	3.8V
	11/12	0V
	13	2V
	14	2.2V
	15	0V
	16	4.4V
	17	4.8V
	18	4.6V
	19	4.9V
	20	1.8V
	21-24	-
	25/26	5V
	27	-
	28	5V
	29/30	0V
	31-34	0V
	35/36	-
	37	5V
	38-40	0V
	41/42	-
	43-50	2.5V
	51/52	0V
	53	5V
	54-56	0V
	57	3V
	59	0.33V
	60	2.6V
	61	3V
	62	2.5V
	63-72	0V
	73-77	2.5V

Ref. No		Nomal mode
IC 401	78	5V
	79	0V
	80/81	2.5V
	82	0.3V
	83	5V
	84	2.5V
	85/86	0V
	87	4.4V
	88/89	5V
	90-100	0V
Q 101	E	5.7V
	C	5.7V
	B	5.2V
Q 211	E	0V
	C	0V
	B	4.7V
Q 212	E	0V
	C	0V
	B	0V
Q 303	E	0V
	C	0V
	B	4.9V
Q 304	E	0V
	C	0V
	B	0.6V
Q 305	E	5V
	C	5V
	B	4.4V
Q 306	E	0V
	C	0V
	B	0.7V
Q 307	E	0V
	C	0V
	B	0.7V
Q 308	E	0V
	C	5V
	B	0V
Q 501	E	0V
	C	0V
	B	7.3V

EXPLODED VIEW

Model No.:CDEG - 77R



MECHANICAL PARTS LIST

Ref. No.	Description	Q'ty	Mfr. Part No.	Remark
1	Cover Top, Secc. Black	1	046122025111	
2	Panel Front, ABS. Black	1	048501025211	Dom
2	Panel Front, ABS. Black	1	048501025212	A,B,C,D,E,F
3	Badge, MP211, Gold	1	048535038311	Dom
3	Badge, MP211, Gold	1	048535038411	A,B,C,D,E,F
4	Button 3Key (L), ABS. Black	1	048545109111	Dom
4	Button 3Key (L), ABS. Black	1	048545109113	A,B,C,D,E,F
5	Window Display, Wine	1	8553016810	
6	Button 2Key (L), ABS. Black	1	048543047111	Dom
6	Button 2Key (L), ABS. Black	1	048543047113	A,B,C,D,E,F
7	Button 1Key (Open/Close), ABS. Black	1	048545109811	
8	Button 3Key (R), ABS. Black	1	048545109211	
9	Button 2Key (R) (Play/Stop), ABS. Black	1	048543047011	
10	Knob Slide, ABS. Black	1	048545109911	
11	Switch Slide	1	4618008610	
12	Switch Tact	10	468003710	
13	Fastener 10mm	3	6528301910	
14	Chassis Main	1	6122635110	
15	Foot Cushion	4	6715021210	
16	Door Tray, ABS. Black	1	048563008011	Dom
16	Door Tray, ABS. Black	1	048563008012	A,B,C,D,E,F
17	Assembly, Loading Unit (Mecha CD)	1	5728008011	
18	Regulator TR Heatsink	1	7505208110	
19	Jack RCA 1P	1	4438112310	
20	Chassis Back, Secc 0.8t	1	046102034511	Dom
20	Chassis Back, Secc 0.8t	1	046102034521	A
20	Chassis Back, Secc 0.8t	1	046102034531	B
20	Chassis Back, Secc 0.8t	1	046102034541	C
20	Chassis Back, Secc 0.8t	1	046102034551	D
20	Chassis Back, Secc 0.8t	1	046102034561	E
20	Chassis Back, Secc 0.8t	1	046102034571	F
21	Connector Stopper 15P	1	6518002210	
22	Fastener 10mm	1	6528301810	

Hardware Kit

Internals

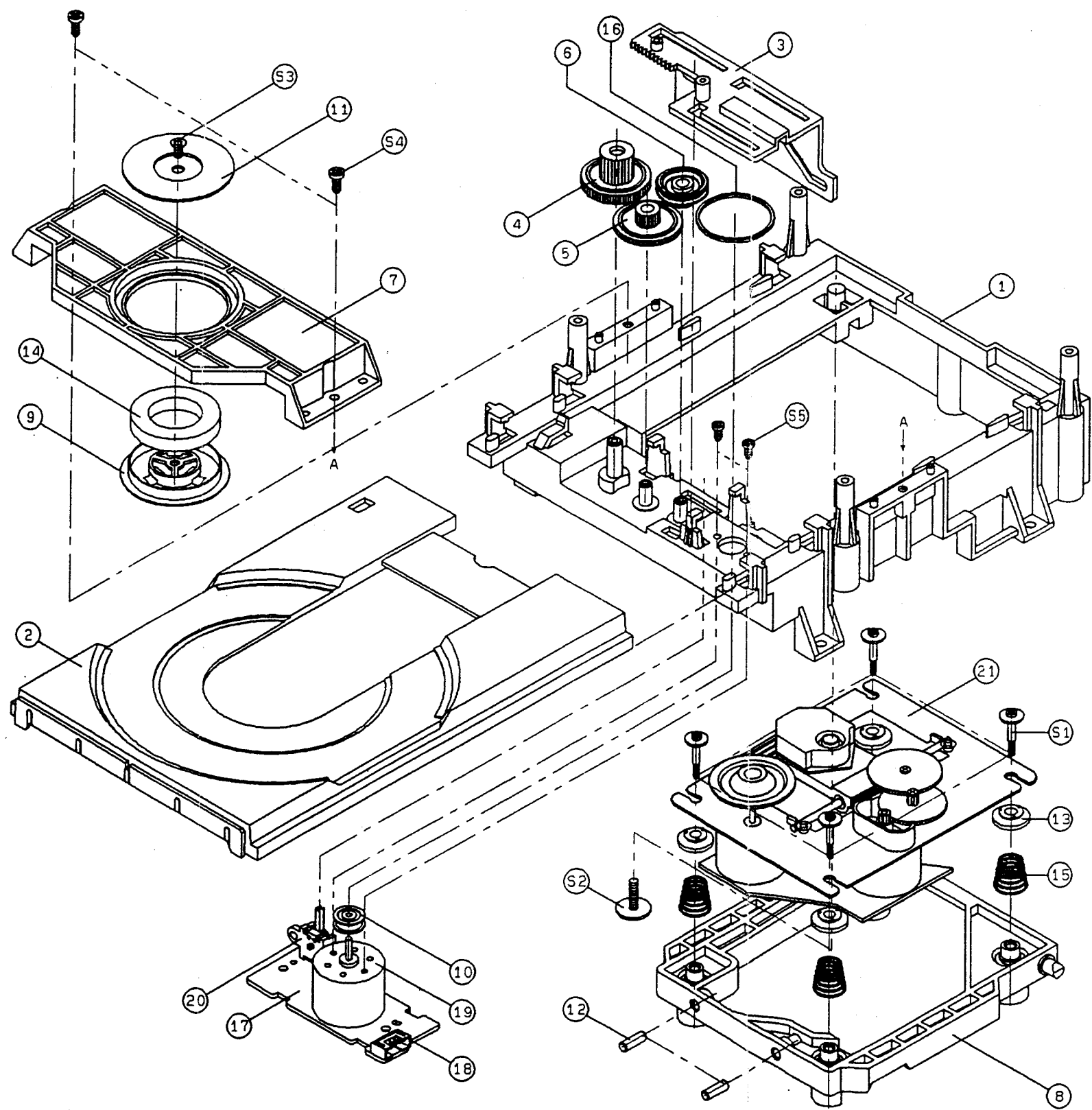
S1	Screw #2 BTC 3x8 ZNY	6	8109230081	
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Externals

S2	Screw #2 BTC 3x8 ZNB	13	8109230083	
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EXPLODED VIEW(COMPACT DISC MECHANISM)

Model No.:CDEG - 77R



PARTS LIST OF DISK MECHANISM UNIT

No.	Part No.	Description	Q'ty	Remark
1	6021601210	BODY MECHA	1	
2	6021800310	TRAY DISC	1	
3	7142000410	CAM SLIDE	1	
4	7103001610	GEAR LOADING	1	
5	7103001710	GEAR CENTER	1	
6	7103001810	GEAR PULLEY	1	
7	6023601210	CHUCK FRAME	1	
8	6062000310	BASE D.U.	1	
9	6063103010	BASE MAGNET	1	
10	7113001310	PULLEY MOTOR	1	
11	6023408610	COVER MAGNET	1	
12	7005007710	SHAFT B. D.	2	
13	6715018420	RUBBER DAMPING	4	
14	5125000910	MAGNET	1	
15	6555009210	SPRING DAMPING	4	
16		BELT (#24X1X1)	1	
17		PCB ILU-04A	1	
18	4428525550	CNT GIL-05P-S2L2-FF	1	
19	5558200210	MOTOR RF 310T-11400	1	
20	4638003210	S/W LEVER (SSCF-21)	1	
21	5708007210	CDP MECHA KSM-210-AAM	1	
Screws				
S1	8155001110	SCREW DAMPING	4	
S2	8155001210	SCREW MECHA	1	
S3	8129226061	SCREW FTC 2. 6X6Y	1	
S4	8159626081	SCREW BTC 2. 6X8Y	2	
S5	8009120051	SCREW BM 2X5Y	2	